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Forth aficionado Richard Hunt continues his series on that most do-it yourself of computer languages This month initiating conversations between the reader and the Forth system in your computer

Up, up and away: Flight Simulators reviewed 15

Flight simulation programs for the Commodore 64 are all the rage right now This month, we cast a critical eye over some of the more popular flight packages Will any of them turn you into a budding Biggles?

22 User Friendly Design – part one: Six rules for better programs

Chris Preston starts a new series to help you write better programs He lays the foundations by giving a set of simple but essential rules for you to follow

Control your home with Vic and 64 – part two: 26

Chris Durham continues his rivetting series by expanding and modifying the control unit he introduced last month You did build it didn't you? Also included is a Basic control program, for both Vic and 64

35 Taskset in profile: The view from Bridlington

Taskset has devoted itself to producing games almost exclusively for the Commodore 64 And it's managed to gain a reputation for using the 64's graphics and sound capabilities to the full Bohdan Buciak took the Seaside Special to Bridlington to meet the creators of Rankin Rodney and Bozo

Screen scene for Vic: 42

46 Vic Victuals:

This month's offerings include a version of the classic 'Breakout' routines for screen scrolling and a hi res plotting program

Speedy disk access: The 1541 Express reviewed 54

The 1541 Express cartridge from Ram Electronics claims to double the speed of your rather sluggish 1541 disk drive Kevin Bergin put the device through its paces to find out just how true those claims are

56 Adding up the Plus/4: The new Commodore Plus/4 previewed

It's now official that the new Commodore Plus 4 will be making an appearance in your High Street shops but it's not actually launched until after this issue has gone to press So we got Karl Dallas to acquire a pre launch model (albeit without the ROM based software) He fuels his opinions with some hands-on experience

People

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Adventuring for regulars:

This month adventure buff John Ransley initiates a regular spot for the dedicated adventurer Reviews of games books hints, opinions and more

Fred on sound: Synthesiser packages reviewed

Recovered from last month's introduction to synthesisers and the Commodore 64's SID chip Fred returns to look at a range of synthesiser packages currently available on the market

Screen scene for the Commodore 64:

Victuals for the 64:

Teaching yourself how to spell in French can be pretty boring Here's a program that not only frenchifies your 64 (or your Vic) but also provides a way of testing your French spelling For the non linguist, there's a program to make your 64 beep whenever you hit a key

Dollas on business: Micro Magpie reviewed

Audiogenic's Magpie was originally a cartridge-based database program costing around £100 Now it's available on disk for a bargain £39 95, making it probably one of the cheapest databases around Karl Dallas finds out how well the new version works

Pet with more memory: A look at the new Commodore 8296

Excited by the 128K memory of the new Commodore 8296 Karl Dallas went out and bought one – and was ready to confine his 96K Pet to the scrap heap He soon found out the 128K is not all that is claimed

Know your Rights: How to complain about duff products

So you think you know your Rights when it comes to complaining about faulty or unsatisfactory products you've bought? Commonsense tells you simply to take back any duff hardware or software But life and the Law are never quite as simple as that Charles Christian explains your Rights and shows you how to complain successfully

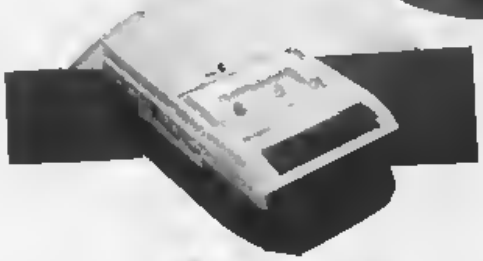
Book Look:

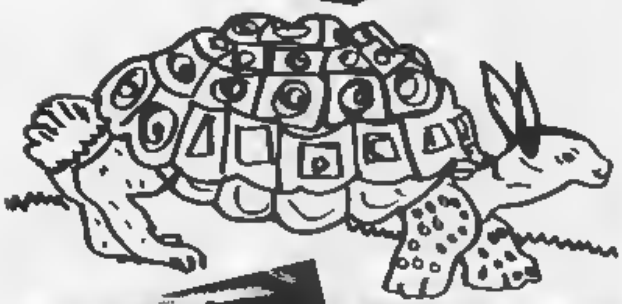
Another batch of critical perusals of computer and computing books

Tommy's Tips:

Tommy continues to burn the midnight oil answering yet another batch of queries from distraught Vic and 64 owners

Readers write:





News

Commodore Corner

Readers will remember that Commodore made a big noise about the Commodore International Computer Art Challenge it organised in April. True to form, it's just announced the winners in equally grandiose style exhibiting the winning entries at a prestigious art gallery in London's fashionable Mayfair.

The overall winning entry came from a certain Hugh Riley, a fine arts graduate from Manchester who's work bears the cryptic title "Louis (Meditation Failure 128)". The image itself is equally baffling to the intellect. It depicts a baby's face with a fly whizzing to and fro, perching intermittently on the infant's nose - Louis is, in fact, Hugh's baby son.

According to Hugh, his entry makes some statement about his current state of unemployment, a fact Commodore did not fail to mention, probably because it enhances the altruism factor of giving him not only £1,500 of Commodore equipment but also a £5,000 endowment to enable him to study computer art at the place of his choice. "I'll probably go to America," says Hugh, completely unruffled by eager media attention.

Other winning entries were not quite so problematic; one winner in the 'dynamic' category depicted the face of E.T. emanating from a black box. Another, called "Mr Freakenstein" showed the aforementioned tapping the keys of a Vic whilst grimacing hideously - probably a Syntax Error.

All entries were programmed without recourse to software aids, which was not Commodore's original intention. The Contest had been timed to coincide with the launch of the Tony Hart and Rolf Harris drawing packages for the 64, in the hope that entrants would use them to generate their images - neither of those packages are yet available.

Life of Riley – Art Challenge winner

More competitions

Commodore has also announced that it's to sponsor the first European heat of the International Programming Competition in collaboration with Thames Polytechnic, the aforementioned event being organised by the Association of Computing Machinery. It's actually being held at Thames Polytechnic on Saturday, 20th October. And according to Commodore's press blurb, the event is "part of its commitment to backing British education".

The idea of the contest is for teams of up to four undergraduate or postgraduate students to solve a set of six programming problems, using either Fortran or Pascal. Simply the team that finds the solution quickest will be declared the winners.

Commodore is providing its 8000 series computers on which the brainstorming sessions will take place. Apparently, the 8000 (or Pet) series is widely used in colleges and universities in Britain. And it looks as though Commodore is plugging that market heavily due to its lack of success in ousting the BBC micro from its lofty pedestal as 'the' micro for primary schools.

New games for old Vic

In the meantime, Commodore is vigorously quashing rumours that the ageing Vic 20 is a doomed bundle of chips, the official line being that Commodore will continue to produce Vics if the demand warrants it. At present, that seems to be happening. And to reinforce that commitment, Commodore continues to launch new Vic games when almost all the independent games companies have turned their Commodore-orientated attention to the more illustrious 64.

Just announced for the unexpanded Vic are *Rapier Punch* and *Starbase*: the former involves knights, dungeons, dragons and treasure, whilst the latter reworks the 'aliens attack futuristic planet' theme. More down to earth (well, not quite) is *Bomber Mission*, a new flight game that needs 16K expansion. Looks like there's something for all tastes, especially since prices are standard at just £4.95.

SHORTS

Wafadrive late: It now looks as though a Commodore 64 version of the Rotronics Wafadrive disk storage system, mentioned last month, will not now be appearing in September as was originally intended. According to Rotronics director, Peter Booth, "we're now going to be a little late for the Christmas market". A denuded version was produced however just to prove that no legs are being pulled. Rotronics plans to include a free wordprocessing package, written by Hewson Consultants, when the device actually appears. A small selection of games should also be available on wafer. Notable interested parties include Artic, Softek, Romik and Melbourne House.

SHORTS

Ground control: Flight simulators for the Commodore 64 seem to be all the rage at the present. But software house Supersoft reckons it's smarter than the rest by producing something more extraterrestrial: a space flight simulator called Interdictor Pilot. The package includes a 48-page manual which, according to the blurb, "provides an insight into the latest technological developments including travel at the speed of light". When you've got bored with reading you can "take part in simulated dogfights with alien craft". The cassette version costs £17.95, and £19.95 for disk - space travel was never cheap.

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SHORTS

Zapping with Danger Mouse: *Fans of that intrepid cartoon rodent, Danger Mouse, will be pleased to hear that Creative Sparks is launching a Commodore 64 game called* Danger Mouse in Double Trouble. *That will be followed by* Danger Mouse in the Black Forest Chateau – *should that have been 'gateau'? Both games will be available on cassette only, costing £7.95 each. But there is a bonus of sorts: buyers of the* Double Trouble *game get to enter a competition. What do you win? How about a trip by Roller and helicopter to the Cosgrove Hall where the Danger Mouse series is filmed?*

Gremlins and Presidents

The games software industry must have an unquenchable desire to provide us all with new and original games to play. The latest avenue it's exploring is politics and current affairs.

A new software house, Sheffield-based Gremlin Graphics, has been making a name for itself (notably on television programmes) by releasing a Commodore 64 game called *Wanted Monty Mole*, which capitalises on the (still ongoing) miners' strike.

Monty, the furry little protagonist, is on a coal-snatching mission in the South Yorkshire coalfield, doing battle with flying pickets and eventually confronting "a fiery figure seated on a graphite throne" – the aforementioned is called Arthur. Monty must topple Arthur from his lofty position by seizing secret ballot papers – and so it goes on.

Whether that's bad taste or not depends on which side of the picket lines you're standing. But Gremlin is trying to calm any irate complaints by donating 5p for every game it sells to the Miners Welfare Fund, as well as a £250 lump sum donation to that same cause.

Meanwhile, a new range of Braingames is being launched by Brighton-based Amplicon. As the name suggests, the games are designed to demand some brain work, as according to Amplicon's Peter Wood, "the majority of games on the market don't present players with sufficient challenge to keep them coming back to replay".

Amplicon reckons it takes brain power to become President of the USA, so it's produced Election Trail for the Commodore 64.

In 'one player' mode, you campaign for the Republican party against the Democrats, represented by the computer. The aim is to win as many States as you can by using various methods to gain support. Those include holding rallies, public debates, media campaigns and getting endorsements from movie stars. You also hold regular opinion polls to see how your party is getting on – pretty realistic, eh? Presidential enquiries on 0273 608331.

Elite hologram

Credit card holders will have noted the tiny holograms now being printed on their favourite piece of plastic. They may be fun to twiddle around but their real purpose is to put the dampers on would-be counterfeiters. Now, that idea is being taken up by the games software industry in its seemingly endless quest to zap the pirates.

Elite Systems, a newly formed software house, is planning to include a hologram sticker on insert cards for all its games. No games have actually appeared yet, but an Elite spokesman reckons three titles will appear in Autumn for the Commodore 64. One is curiously called *Kokotoni Wilf*, the other two are based on American TV series – there's no escaping them.

The holographic process is expensive, but Elite says its games prices will remain competitive at around £6.95. If you lose interest in the game, you can play around with a three-dimensional Elite logo. Whether the process succeeds or not, it will certainly make the games more attractive to prospective buyers – cunning, eh?

Speaking up for the 64

The long-awaited Speech 64 speech synthesiser cartridge from Currah Computer Components is now available. Wary of being thought too modest, Currah describes it as "the most user-friendly and versatile speech unit available for any computer, anywhere". After that lot, the £29.95 price-tag seems quite reasonable.

Speech 64 works by using a set of allophones – the sounds that go together to make up a particular word. That means the package has an unlimited vocabulary because it builds words from its stock of component sounds. Sound is actually generated through the speaker on your TV or monitor (a DIN plug from the cartridge slots into the 64's video port).

Using the Basic command SAY, the device will voice any text or numbers inside inverted commas, following its programmed set of pronunciation rules. But it does occasionally come unstuck – 'comb', for example, is pronounced with a 'b'. But you can type the word using conventional allophone notation to get the sound right.

Apart from the SAY command, there's KON, any key you hit is voiced (even the cursor and function keys); and KOFF, which turns the facility off. You have a choice of two voice pitches (gained by placing either a 0 or 1 after the SAY command), and various levels of intonation. For the more advanced, the (rather small) manual gives examples of incorporating speech into Basic and machine code programs, using the cartridge's 256 allophone buffer.

And Speech 64 looks like making an impact on the games market. Since it uses none of the 64's operating system, its facilities can be incorporated easily into games. Already, Anirog's new *P C Fuzz* game uses it. Or maybe you just want that rather tinny Dalek voice to wake you up in the morning? We'll be reviewing it soon. More details on 0429 72996.

SHORTS

Funny titles Dept: *Richard Shepherd Software is all set to launch a new adventure game for the Commodore 64, with the imaginative title,* Upper Gumtree. *Without giving too much away, the game features a certain Professor Blowitovitz who holds the fate of the world in his hands. Good simple fun? Late September is forecast as the launch date and the game will cost £9.95 on tape and £12.95 on disk.*

SHORTS

Amending Aardi: *Albert van Aardt has written to point out that the listing he sent us for his* Albert's Assessment Aid *program (Commodore User July 1984) contained some inaccurate lines. To make the program run as it should, substitute lines 172 and 173 with the following:*

```
171 FOR I = 1 TO 5000
172 K = (K+(K*R)) - P: IF
    K< P THEN M = I: I =
    5000
173 NEXT
```

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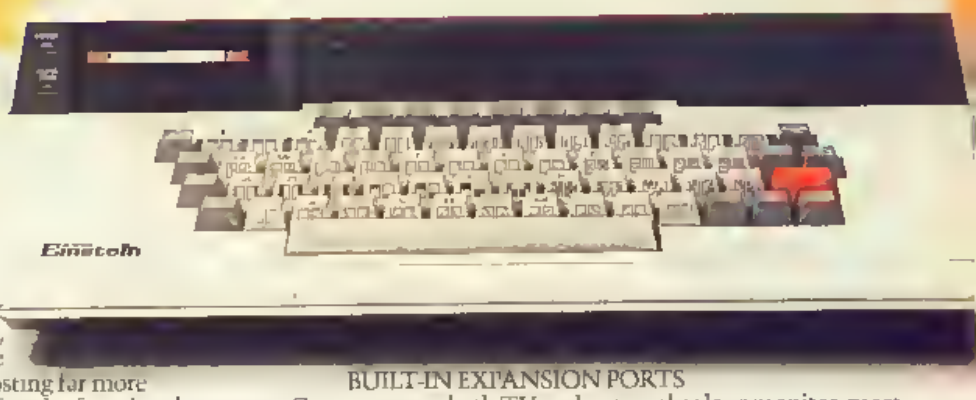

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Extending the Legend

Legend's Valhalla soared up the Commodore games charts when it finally appeared on the 64 a few months ago, finally' because it had achieved cult status long ago on the Spectrum Whether that was a mistake or a clever marketing ploy, Legend has changed tack it's releasing *The Great Space Race*, its latest offering simultaneously for Spectrum and 64

The game is due to appear in early October (no prices yet) probably heralded by a massive spending spree on publicity The game itself is rumoured to have cost £230,000 to develop With that kind of money involved, you don't keep a low profile.

According to Legend director, John Peel, the new game uses a new operating system called Movisoft 2 which "features technical effects never seen before in home computer software" And the graphics? 'We have finally achieved true solid 3-D graphics, which, under the control of a computerised 'camera director' create the most realistic and spectacular pictures ever ' Modesty apart, the game looks set to bring in more money bags for Legend. We're queuing up for our review copy

Cassette player convertible

Commodore users have grounds for being dissatisfied with their lot when it comes to using Commodore's own Datasette for loading and storing programs Priced at around £40, the device is somewhat expensive, there are no real alternatives to it, and having paid your money, you can do nothing else with it Enter the DR 2301 data recorder for the Vic and 64 from Rotronics, which doubles as an ordinary cassette recorder, and costs just £34 95

Rotronics supplies a cord which you plug into the DIN socket on the side of the device, and other end into the cassette port on your Vic or 64. The unit then takes its power from the computer and works just like the Datasette Two differences, though there's no recording light, and if you turn the volume up you can hear the data loading signals – those amount to a load of nasty screeching sounds

Our review model happily loaded even the largest 64 games programs and had no trouble with the new fast-loading systems now being introduced on games

As a tape player and recorder, the DR2301 performs adequately Nothing brilliant in the way of sound (there's volume but no tone control), but what can you expect for the money? By the way, you can't play audio tapes when the device is plugged into your computer That's a pity; music while you program might have been an attractive proposition.

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The Forth Dimension:

Programming with a DIY Language

Part two – Peek-a-byte

by Richard G Hunt

The Forth dictionary consists of up to 200 or so words. So far I have mentioned only a few of the arithmetical words and to cover every word is outside the planned scope of these articles, the object of which is more to initiate conversations between the reader and the Forth system in your computer. In so doing I hope you'll see that Forth can be regarded as a computer environment where DIY reigns supreme.

The 6502 processor family has the curious habit of presenting any two-byte address (please take care not to confuse a machine-code 'word' of two bytes – which in Forth is a 'cell' with the Forth word) in low byte, high byte order. Thus is why in Basic one must PEEK(43) + 256* PEEK(44) on a Vic to find out the decimal start of Basic RAM.

The actual sum might look like 1 + 256 * 18 = 4609. In Forth the operation would be ~ 1 18 256 * + (RETURN) 4609 OK.

Supposing we wanted a Forth word to perform the correct operation on any pair of addresses. Obviously other addresses must be used. Forth certainly does not use the Basic memory pointers! The word (c@) is known as 'see-fetch', it copies on to the stack the contents of the byte addressed thus: ~ 641 c@ 642 c@ <.

Now the operation ~ 256 * + < can be performed. To create a new word the colon definition should be used. Let's define the word (LOWHI) –

```
: LOWHI swap c@ rot c@ swap drop 256 * + . drop ;
```

Now what's all this 'swap drop' business? (swap) merely exchanges the places on the stack of the top two items. (rot) rotates the third stack item to the top of the stack (TOS), and (drop) drops the TOS right off the stack. They are needed here because we are asking (LOWHI) to operate on two addresses we supply, for example: ~ 641 642 LOWHI <. In order that the correct multiplication and addition take place the operands must be correctly positioned.

In our example the stack now looks like this:

```
 1) 641 642
 2) 642 641        swap
 3) 642 641 0      c@
 4) 641 0 642      rot
 5) 641 0 642 18   c@
 6) 641 0 18 642   swap
 7) 641 0 18 256   drop 256
 8) 641 0 4608     *
 9) 641 4608       +
10) 641            .
11)                drop
```

The effect of words on the stack are shown by stack diagrams. That for (LOWHI) would be (addr \ addr 2 –) where two supplied addresses cause the word to function.

A problem ensues if the result of the word is greater than 32767. This is the largest signed number Forth can handle. In this case we are not interested in the sign of the number, so we can substitute (U.) for (.). Now output is requested as an unsigned number, any number between 0 and 65535.

Actually I don't think (LOWHI) is particularly useful except as a demonstration. You may ~FORGET LOWHI< at choice.

Now for an objective that extends the idea of looking at memory. Let's define a word that ideally gives a hex memory dump on the screen with ASCII equivalents. First define a word (PEEK).

```
: PEEK c@ u. ;
```

This is recognisably a derivative of (LOWHI) but uses only one address as a parameter.

Next we diverge while I introduce the first Forth structure word (DO – LOOP). This enables repetitive processing for a definitive number of times. (DO) requires two parameters, a limit and an index. The limit represents the highest increment of the loop. The index is the start. Words between (DO) and (LOOP) are thus executed (limit – index) times. For example, the word

```
: TEST 10 0 do 2 3 + loop ;
```

will output:

```
5 5 5 5 5 5 5 5 5 5 OK
```

The index that increments with each loop can be used to increment the address you wish to (PEEK). The index word (I) is used in a loop like this:

```
: TEST2 10 0 do I . loop ;
```

. which outputs.

```
0 1 2 3 4 5 6 7 8 9 OK
```

Now we can build a loop into our new word:

```
: DUMP 1+ swap do I peek cr loop ; (addr1 addr2 ——h)
```

This takes two memory addresses, adds 1 to the second, swaps their order and uses them as parameters for a loop that PEEKs the value of the byte accessed by the loop index. Try it.

Forth

Now >FORGET PEEK< and redefine it so –

PEEK swap do I (c@ u. cr loop ;

This has another effect. (fetch) fetches a 16-bit value – two bytes at a time, as opposed to (c@) which fetches only one. What need was there ever for (LOWHI)?! Can you think of a way to display the address against its contents? Answer at the end of this article ...

You can in fact play around with versions of (PEEK) and (DUMP) which allow you to display whatever you will. It's a good way to find out what is happening in the Forth system that's different from the Basic you already know.

Some implementations may already support (DUMP) in the form I stated earlier as my objective. Here, with comments (which may be omitted when you enter it), is my own DIY version based on that objective. It uses some words I have not explained yet. Note the re-definition (purpose-built) of (PEEK) and how it and (ASCII) are built into the higher level of definition. The whole code should be entered on an editing screen and (LOAD)ed.

```
: PEEK  do ( c@ 3.r loop ( ( read, format & display d,t@ from loop)

: ASCII do ( c@ emit loop  ) (read & display ascii character)

: DUMP  hex ' add base [0]

        1+ swap cr ( set outer loop parameters in order)

        do ( begin loop)

           I dup dup ( make 3 copies of index)

           8 + rot rot ( add loop increment and order them)

           ( u. 8 0 r )  create  unsigned double number and format

           over over ( copy inner loop parameters)

           peek space

           ascii  cr

        8 +loop ( increment and loop

        decimal (reset base 10)

        ;
```

((.r) & (d.r) are formatted number output words. (dup) copies the TOS while (over) copies the second on the stack to TOS. (space) outputs an ASCII blank, and (+loop) increments the loop by a specific quantity, like BASIC STEP. The loop increment may be changed to 8 for a C-64.)

Next time – all about the stack.

Answer to the problem set above : **PEEK** 1+ swap do i 2 u c@ u cr loop ;

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This is your pilot speaking...

Flight Simulators for the 64

by Jim Grubbs

There is a picture that hangs in my house of a young lad about 10 years old or so. The setting appears to be a clear summer night: the boy's sights are focused on the sky as a large aircraft passes overhead. My grandmother says that it reminds her very much of my father at that age – Dad went to join the air force.

The family interest in what we now call aerospace continues with me. And with a Commodore 64 computer, you can do the next best thing to actually piloting an aircraft – complete with good sound, vision and colour effects.

Several flight simulator packages are available. Here's the results of many hours of test flying some of the best. Chris Durham has added a piece on Anirog's 737 simulator.

Solo Flight by Microprose

Solo *Flight* was written by Sid Meier for the Atari and adapted to the 64 by Grant Irani for Microprose Software.

One of the attractions of this package is the ability to choose from several different locales to fly in – the flat country of Kansas, the mountains of Colorado, and the unique combination of ocean on one side and mountains on the other of coastal Washington State offer something for everyone.

Once you become an ace you can try the mail run game that is included and put your skills to a real trial. And you can also exercise some control over the degree of difficulty by varying the weather conditions and such.

The bottom portion of the screen displays an instrument cluster not unlike those found in the cockpit of a small aircraft. The upper part of the screen is a three-dimensional view, though the view projected is somewhat different than a true 'view out of the window'. It's more as if you were being followed by a television crew in a plane behind you. That's the perspective you have.

This detracts slightly from the realism of the program. But the view is fairly detailed. When you are close to the ground, you can even see your shadow. The scenery remains in perspective as you bank and turn.

A 16-page instruction booklet is included that adequately describes the basic techniques of flying and includes maps of the airports.

In addition to flying visually, *Solo Flight* is equipped with avionics for *IFR* (instrument flight rules) operation. When flying IFR, the top of the screen turns totally grey so you must navigate by instruments alone.

The instrument landing system (ILS) included is not quite as realistic as some tested, but does give you a feel for instrument-assisted flying.

After an IFR flight, a map is projected on the screen showing the actual course you flew. That can be quite interesting, particularly when you first try it!

One of the features I found most welcome is the ability to practice landings continually. That's the most difficult part of flying and *Solo Flight* allows you to get on top of it.

The response of *Solo Flight* to changes in joystick direction is excellent. Controls operate smoothly. It is a delight to fly this one.

At $34.95 US, £14.95 (on both cassette and disk) in Britain, *Solo Flight* is definitely good value – sure to bring you many hours of enjoyment.

IFR by Academy Software

Academy Software invites you to put on the 'hood' and fly its *IFR* simulator. Written by Ron Wanttaja, a private pilot and employee of Boeing Aerospace, *IFR* is an excellent package if you are interested in instrument flying only.

Since you have no view out of the window at all, the instrument panel of *IFR* takes up the whole screen.

You begin by selecting the degree of difficulty and the amount of turbulence. An editor is also available for changing other flight conditions; a 20-page instruction manual comes with the package.

Two ILS airports are included and two non-instrument approach runways are also available.

Are you only using

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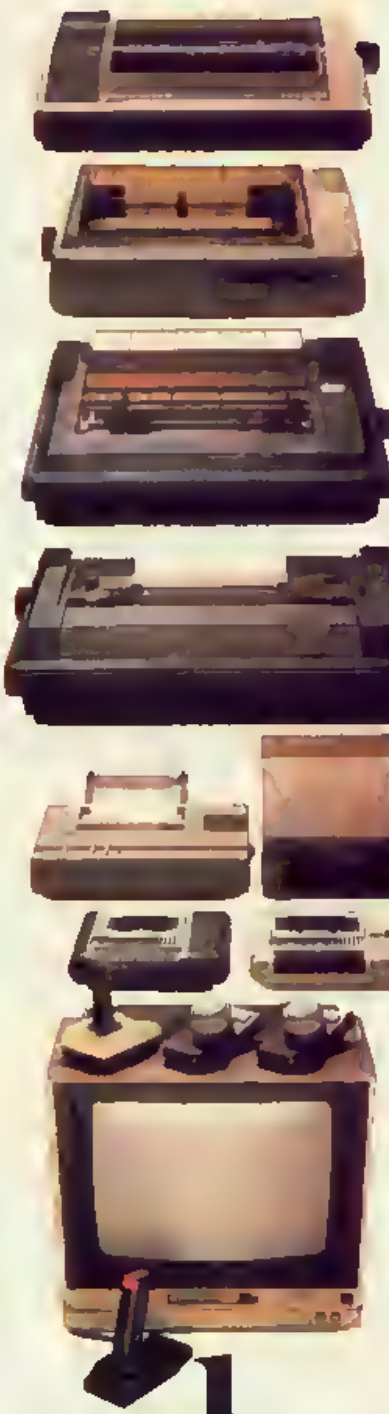

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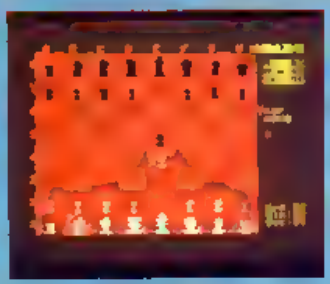

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Since this is strictly an IFR simulator, you may be asking, how do you land IFR at a non-ILS airport? The maps in the instruction manual provide you with the exact location of the airstrips, giving the latitude and longitude for the top and bottom and each end of the runway. Landing in this fashion is quite a challenge since you have no visual clues at all as to what is going on!

You must be sure and use the map in the instructions, or you may find yourself flying along just fine . only to find out that you are too low and come crashing into a cliff.

One of the most impressive features of *IFR* is difficult to describe in words because it involves the sound effects associated with the outer, middle and inner markers of the landing system. Anyone familiar with avionics (aviation electronics) will appreciate the realism of the ILS implemented in *IFR*.

Here again, the controls respond quite smoothly. For an IFR-only simulator, this one is another winner at $29.95 US (we don't know of a UK source – Ed).

Flight by Anger

Lest you think that the yanks have completely taken over the simulator market, Anger Productions offers *Flight* by C. Johnson.

At a top speed of 400 knots and the sound of a roaring jet engine, *Flight* is definitely in the large aircraft category. It allows you to fly between eight English airports.

You navigate using a grid system that takes a bit of getting used to. But the major problem is that *Flight* comes with no instruction manual, only an instruction card. Complete instructions are available when you start the program, including a map showing the grid system. But it's almost a necessity to copy that map on to paper; otherwise you will find it very difficult to navigate properly.

In the middle of the screen is an area where instructions appear. This simplifies your pilot duties, I'm not sure that it's very realistic however.

A window view is included. While sitting on the ground you can see the runway, but once you're airborne the graphics subside to a green field for the ground and blue for the sky.

Operation of *Flight* is very smooth, and the instructions make it easy to navigate. This program reminds me of early versions of *Runway 64* (that program is not included here since I wasn't able to obtain the current version). Early versions of *Runway* were written entirely in Basic and responded very slowly. *Flight* does not suffer those problems, but looks somewhat similar graphically.

I'm sure that the local availability of *Flight* will make it a popular item in Britain at £9.95, but it does lack the realism and complexity of some other offerings.

For an alternative (and rather harsher) judgement, Chris Durham comments: "this was one of the first flight simulators to be released for the 64, as such it had a good chance to capture a large share of the potential pilots who owned a 64. Unfortunately, potential is about all it does have since it bears about as much resemblance to flying a plane as driving a computer.

"The graphic representation of Britain is excellent and a small dot shows where you are and moves as you watch, however, that's the only movement you're likely to see in the whole program because the 'view' through the cockpit window is non existent. The instructions are also rather poor; some of the instruments are not even mentioned!

"There also appear to be a couple of small 'bugs' in the program. Try as I might I cannot get the undercarriage to stay up, it goes up and down like a yo-yo seemingly at random (or rather every time I put it up it comes down of its own accord after a few seconds!). The second problem may just be me, but every time I try to land I get an 'Emergency Climb Alarm'. This appears to lock the controls so I can't do anything about it anyway. No matter how accurately I follow the landing instructions it gets me every time.

'After two months *I* still haven't landed, and therein lies another problem – there is no 'skill' level to alter. There are eight different airports to 'fly' to, but if you choose one of the further ones you'll die of boredom before you ever get there.

"All in all I was rather disappointed in this offering, there are now better simulators on the market at lower prices."

Flight Simulator II by Sublogic

About 150 kilometers east of my home is the University of Illinois at Champaign Urbana. A lot of really neat things have come from the U of I – including Sublogic Corporation and an amazing item called *Flight Simulator II*.

Sublogic's first simulator was written in 1977 for a 16K Apple computer. *FS II* is a much upgraded version of the original, including full colour and breathtaking three-dimensional graphics – it's very difficult to describe *FS II* in a few words and even more difficult to do justice to the beautiful graphics.

The first thing that catches your attention is the packaging. *FS II* comes complete with a pilot's operating handbook and a flight manual – and a book on flight physics and aircraft control that includes a basic flight course! Nearly 200 pages of documentation, in two books, including realistic reproductions

of flight maps to support the 80 (!) airports programmed into the package

When you boot the program, you find yourself sitting at the end of the runway at Meigs field on the shore of Lake Michigan in downtown Chicago. Ahead are the twin towers of the Hancock building. As you take off, you may select from one of nine views or see your radar, zooming it in or out to suit your needs.

You can see the Sears Tower and other Chicago landmarks. A very powerful editor allows you control over forty different flight parameters - you can set the levels for not one but two layers of clouds, for instance.

I decided that it was appropriate to turn my plane south and head toward Willard Field in Champaign on my test flight. As I did, Interstate 57 appeared off to my left: south of Kankakee, the checkerboard pattern of Illinois corn fields appeared.

Land marks are quite detailed, but only available in the vicinity of the airfields. After all, a 170K disk can only hold so much!

A communications radio, two navigational radios, a transponder, and an emergency locator transmitter are included. So operation is quite realistic: you must tune the receivers to the proper frequency yourself. When you enter the range of the control tower a message will appear on the top of the screen, provided of course you have your radio properly set!

FS II allows you to select day, night, or dusk flight, and when you become tired of flying normally, a World War I flight game is included too!

Is *FS II* the perfect flight simulator? I think it's as close as I've seen. The only drawback I found was the feel of the controls. They didn't seem to be slow exactly, but they did seem to be dampened, like the needle on a meter. Incidentally, you can select either keyboard control, or joystick control, or a combination of the two. You may even use two joysticks if you have them.

At $45.95 US and £41 (disk only) in the UK *Flight Simulator II* is in the Cadillac price range. Without a doubt, *FS II* includes Cadillac type features. I fell in love with it!

Flight Path 737 by Anirog

This £7.95 flight simulator is now available on tape (with TURBO load) or disk, ensuring little time is wasted getting started. It also runs on Vic (with 16K expansion) or the 64.

Initial impressions are good, the opening music is excellent and you get to select the skill level from 'First Solo' to 'Test Pilot'.

You start the actual simulation looking at a fairly realistic cockpit display with the runway somewhere in front of you, I say 'somewhere' because the first thing you have to do is line up the aircraft on the correct heading before you can take off. This is fine to begin with, but gets rather monotonous when you have to go through the routine every single time.

Having taken off you must climb rapidly in order to clear the mountains which suddenly loom ahead - not forgetting of course to raise the flaps and undercarriage! Unlike the Anger Products effort, you can see the mountains through the windscreen (even if they are static!) and sometime while crossing the mountain range you have to change course for the destination airfield.

You then start your descent, and the simulation here is quite good, ten miles out you get a high-on-line/low indicator plus a visual impression of the runway in the distance. There is a lot to think about since your speed increases as you descend, the undercarriage has to be lowered while still above 300ft and you can't lower the flaps if you're doing over 200 knots. Having done everything correctly you touch down with a whisper (or a my case a heavy thud!) and get a message telling you how good, or bad, your landing was.

Obviously you are going to make mistakes the first few times and these are all trapped; unfortunately all you get is a text message on a blank screen telling you what you did wrong, and then you have to start all over again from the beginning - even if it was just that you forgot to lower the undercarriage above 300ft. What's wrong with an undercarriage alarm? Why not let the plane actually crash? As it is, the easy option of stopping the program the minute you make any mistake, however minor, can get very frustrating.

Nevertheless, I kept having to have one more try to see if I could get it right this time; and such addiction is what makes a good game.

Unlike some flight simulators I have seen on the Spectrum, this is still not *real* flying, you only have one place to go to and you can't do anything fancy while you are in the air. It is however a step in the right direction.

As long as you aren't intending to go for a private pilot's licence, this simulation will keep you amused for some hours.

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User-friendly design: Six Rules for better programs

Part One of a series

by Chris Preston

This is the first article in a new series intended to help you write better programs. And when we say 'better', we don't mean Faster, or Smaller, or Containing Lots of Complicated Things that Nobody Else Understands and Neither Will I in Six Month's Time. No, this time around we want a 'good' program to be one which is a joy to use, whether you have just picked it up from the dealer or have been using it for two years.

A typical program has three stages. The first is a short initialisation section which carries out various things which are done once and once only – such as dimensioning arrays and setting initial values of variables. The second part is the data entry section, where the user is expected to give the program all the information it requires. After this the program passes into the third section, processing; there all the real work is carried out.

At the end of processing the program may finish. Or it may go back for some more data entry – as in an invoicing program, where once the details of a customer's order (the data entry) has been keyed in with an invoice produced and the value of the purchase sent to the customer's file (that's the processing), the program returns to data entry for the next invoice.

As far as the user is concerned, it is section 2, the data entry part, which decides whether the program is 'good' or not. He or she does not care how polished and efficient the processing section is, or what clever tricks the programmer gets up to, the user just wants to be able to enter the data quickly and easily, without having to sit with the manual on one's knee to work out which button to push next.

The trouble is that far too many programmers see the program simply in terms of the processing section.

To them data entry is an annoying prelude to the delights to come. A typical programmer is like a child gobbling down dinner as fast as possible so that it can get started on the chocolate gateau.

Add to that the fact that writing a good data entry section involves an awful lot of hard work. The net result? That all-important aspect of programming gets skimped terribly.

Remember this maxim **always try to make the user's life as easy as possible**. You may *think* a particular program of yours is easy to use, but then you would, you wrote it! Your user may not be as good a typist as you and not able to find the X key immediately. He or she may be short-sighted and unable to distinguish easily all the text you have crammed on to the screen. The computer may be sited under a bright flourescent light to confuse things.

Above all, what seems obvious to you may be an impenetrable wall of incomprehension to the user.

Before looking at the requirements for a good data entry routine, there are a few requirements for screen display which are often overlooked.

1 Every screen should have a title telling the user exactly what he or she is doing.

If the user selects an option to modify a file, the program should put a banner at the top of the screen saying "FILE UPDATE" – preferably with the name of the file too, as in "ADDRESS FILE UPDATE". That way if he gets distracted by a phone call, he can come back to the machine and tell at a glance what he was doing. Don't forget that a new user may be able to find this out from the screen display without a bit of head scratching – and when users have to think, they make mistakes.

2 Choose suitable colours for the display.

Scientific tests have clearly shown that, for prolonged use, the best (which in this case translates as 'least strenuous') video display is probably green or amber text on a black background. Black and white is no good at all! Some computers do not give any choice, but even those with a monochrome display usually give the programmer the choice of light-on-dark text or dark-on-light text.

If you have light text on a dark ground, when the tube is poorly focused the light writing will spread out without a drastic effect on legibility. On the other hand, if you use dark text the bright background will spill into the letters, making it impossible to read clearly. This is especially important if an ordinary TV is being used rather than a monitor, because a TV cannot produce the same quality of display.

In addition, though, Vic and 64 users have the benefit of being able to show many colours on the screen. Use them by all means – you'd be daft not to take the opportunity to make the display more meaningful and more immediately comprehensible. But be careful. Unless you are an artist or an interior designer and know all the pitfalls of putting clashing colours together, you can easily produce a technicolour nightmare which could quickly produce a technicolour yawn in a user!

3 Error messages should always appear in the same place on the screen.

The best place for this is probably the bottom line of the screen. Putting the text in the same place all the time means that the user does

not have to search the screen for the error message

In addition, the error text should be made to stand out from the screen by using reverse video or some contrasting colours. We can get away with dark-on-light here, because the message only has to be read once before (hopefully) it is removed from the screen, that is not too much of a strain on the reader.

DON'T GO OVERBOARD

Of course where possible an error message should always be accompanied by a noise from the computer to draw the operator's attention. Suitable noises are easy to generate on the Vic and 64 (but again, please don't go overboard on these); most Pets will respond to PRINT CHR$(7) with a pretty little warble from an internal speaker.

4 Remove prompts from the screen once they have been obeyed.

If you display a prompt on the screen saying something like PRESS ANY KEY TO CONTINUE, perhaps while waiting for the user to put a new disk or tape in a drive, it should disappear once a key has been pressed.

This is easy enough to do by overprinting it with a string of spaces:

```
100 PRINT "LOAD A BLANK
    TAPE IN THE CASSETTE
    DECK"
110 PRINT "AND PRESS ANY
    KEY TO CONTINUE"
120 GET A$
130 PRINT "[CUP][CUP]";
    SP$: PRINT SP$
```

The string SP$ is just a string full of spaces. (It saves a lot of space to say PRINT SP$ every time you want to print 40 spaces rather than a PRINT command followed by quotes and 40 taps on the space bar.)

You can also print a smaller number of spaces (for blanking part of a line) by using LEFT$(SP$,15). As well as using less memory (only nine bytes), it is also obvious when listing the program exactly how many spaces are going to be printed – it is quite difficult to count spaces in a listing! Writing programs is quite enough work without making it unnecessarily hard on yourself.

Again prompts can be made to stand out from the screen by using contrasting display modes or colours.

IT SHOULD DISAPPEAR...

FIT THE USER...

5 Make your text fit your user.

Different people wear different-sized clothes, Twiggy would not feel comfortable in one of Cyril Smith's suits (especially if he was still wearing it!). If possible, then, tailor your text to your user. If the operator is an experienced computer user, you can be far more brief in your instructions ("MOUNT A BLANK CASSETTE") than you can if they have never seen one before ("PUT A BLANK CASSETTE INTO THE DRIVE, CLOSE THE DOOR, AND PRESS THE PLAY BUTTON").

More often than not, of course, the programs will be used by a range of people of varying experience. The important thing here (and it is very difficult to achieve) is to write an all purpose program – one that is sufficiently self-explanatory to be easily controlled by a first-time user, but one which a regular user does not find insufferably repetitive.

A good example of how you might manage this is the WordStar word processing package. It has three 'levels' of user instructions, from one with no prompts at all to one where almost every key depression produces another menu of options which can be selected. The user picks the one he or she is happiest with. In addition it is possible to ask for 'help' on any topic relating to the use of the program, in which case text is displayed on the screen explaining the point in detail. (The subject of menus and 'help' screens will be covered in a later article in this series.)

6 USE CAPITALS.

The point here is that CAPITAL LETTERS are twice the size of lower case ones: remember that short sighted old codger with a clapped-out video display and bright light overhead. While it may look very pretty mixing upper and lower case letters, remember that a program should be useful as well as nice to look at.

The only possible exception is the Vic-20, because the letters are so big anyway: but 40 or 80 column screens should usually be left in upper case.

SHORT-SIGHTED OLD CODGER

***Next issue:** down to the nitty-gritty with data entry – how to do it (and how not to do it).*

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Project

Control your home with your Vic or 64

by Chris Durham

Part Two of the series

This month we continue our series on how to control your home with a few ways of getting more out of the User Port by adding another part of our system.

Last month we showed you how a simple interface unit could control up to eight mains-powered devices. This month we are going to go one stage further and give control over the same eight devices – but using only half the number of lines from the User Port.

And for those who like the ideas mentioned last month, but don't want to build, we look at some of the commercial units currently available.

First, a quick overview of how the User Port works. The User Port is located at address 56577 in the 64 memory map, 37136 in the Vic memory, and it can be PEEKed and POKEd like any other location.

Those of you who have not played around with the User Port may be wondering how the Port knows whether it is being used for input or output. This aspect is controlled by a register (or address) within the computer called **Data Direction Register** which is located at memory address 56579 on the 64, 37138 on the Vic.

There is a direct relationship between this register and the User Port; each of the eight 'bits' in the register determines whether the corresponding line in the User Port will be an input or an output. If the 'bit' is set to a 1, the line is an output and if it's 0, the line is an input.

So setting the Data Direction Register to the value 15 will set up the first four lines of the Port as outputs and the remaining four lines as inputs (Figure 1). Once this has been done it is then merely a matter of POKEing a value into the User Port address to set the lines on or off. To get an input requires a PEEK command to read the value of the input lines.

Logical digression

In order to use the facilities of the User Port to the full it is necessary to understand how the operators **AND** and **OR** work.

Together, these allow you to set or unset individual 'bits' in an address without affecting the rest of the address. Each 'bit' in an address has a value equal to 2^n where n is the bit number (see Figure 2).

If we **OR** an address with a number, the final result sets to 1 all the bits which were 'on' in the address to start with plus those bits which make up the ORed number (see Figure 3). With the **AND** function, the result is to leave set only those bits which are common to both the address and the number (Figure 4).

If you look at the code we used last month to turn the individual lines on and off you should now be able to understand how it works. But you may wonder why we set the line to 0 to turn a device on and 1 to turn it off, surely that's the wrong way round?

In fact the interface we built last month is designed to work on 'negative logic'. Without going into too much detail, this is done to make the circuit more efficient and fail-safe, if the line is broken or any wires touch each other the mains device switches itself off.

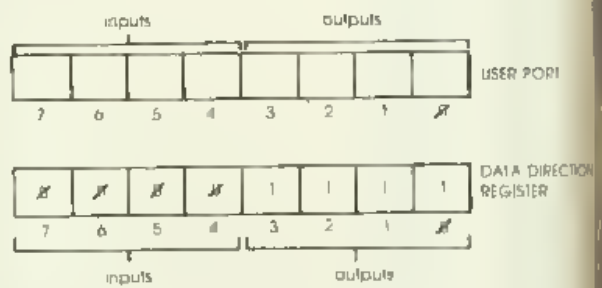

Figure 1. The Data Direction Register

The Control Interface

This is the circuit that is going to do the decoding for us – and thus to allow more efficient use to be made of the User Port. It is based on a device which will decode four bits into their 16 possible combinations.

If we connect this widget across the first four lines of the Port, then by POKEing any

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Games

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number between 0 and 15 we can set the relevant output on the device

That isn't all we have to do, though, the device can only have one of its outputs on at any one time. This means that if we switch another device on, the first device promptly switches off again. What we need is some form of storage so that we alter one device at a time *without affecting any others*; a storage device that does this is called a **latch**.

Diagram 1 shows the block diagram of the circuit we will be using. Each of the two latches takes eight lines from the decoder, four to switch the latched outputs on and four to switch them off. A total of eight controlled lines are then converted to negative logic by the final buffer/driver.

This last serves two purposes, in addition to inverting the logic state, it provides the necessary power to drive the mains controller.

In order to conserve the limited power available from the computer I have used CMOS (Complementary Metal Oxide Semiconductor) devices throughout. Unfortunately, CMOS has an extremely limited power output and cannot provide sufficient current to operate the opto-isolators over a long length of cable.

The final bit of the circuit is therefore a special High-power CMOS (HCMOS) device – with all the characteristics of a CMOS device, but with power output levels equivalent to the higher power TTL (Transistor/Transistor Logic) devices. This is a new breed of integrated circuit and may not be readily available from normal suppliers. If you do have difficulty your supplier should be able to obtain it from the address given in the parts list.

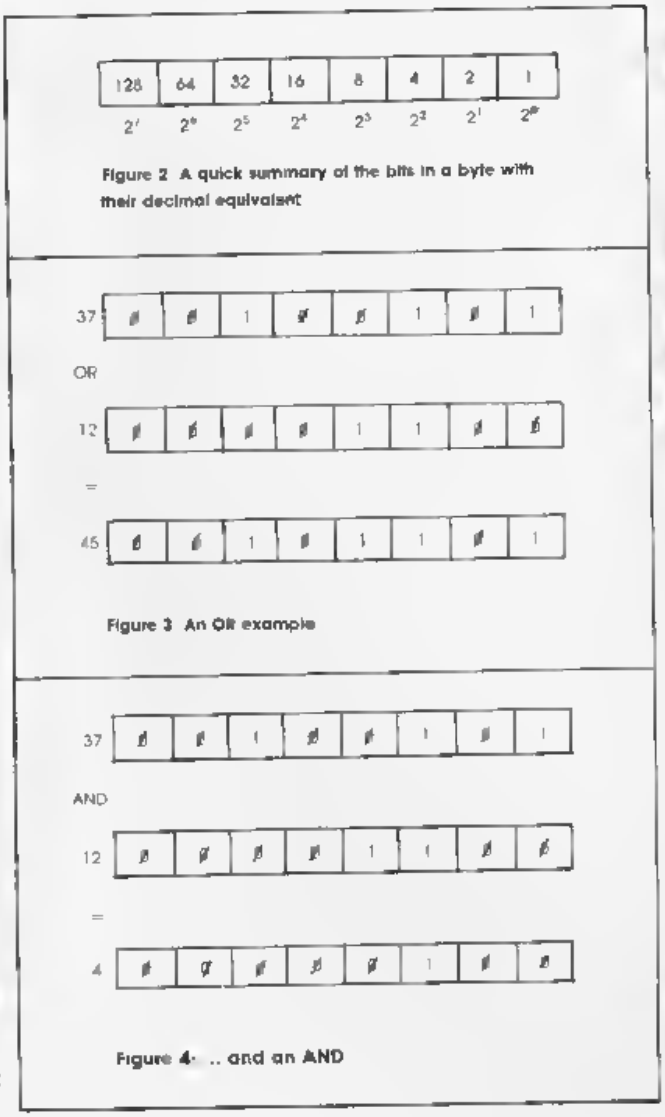


Figure 2 A quick summary of the bits in a byte with their decimal equivalent

Figure 3 An OR example

Figure 4 .. and an AND

Construction details

This unit requires a custom-made PCB, the layout of which is shown in **Diagram 2**. The component layout is shown in **Diagram 3**.

For this board the construction is very straightforward. First solder the wire links, connecting plugs and DIL sockets; then do the discrete components. Next, solder the two wires for the reset switch (if fitted); and then solder the first eight wires of the ribbon cable (the remaining wires will be used for the input board in the fourth part of the series. Leave at least 3in spare on the unused wires).

Finally, clean up the copper tracks with meths, getting off all the excess flux; check that there are no solder bridges and that all components are correctly mounted.

Once you have done that you can solder the ribbon cable to the User Port plug as shown in Figure 5.

The last stage is fitting the ICs into the sockets. Because we are using CMOS devices it is important that you handle them with reasonable care, they are particularly sensitive to static electricity, and careless handling can damage them irreparably. The best way is to earth yourself to a water-pipe (or similar) before touching the ICs. Put them carefully into the sockets, taking care not to bend any of the pins.

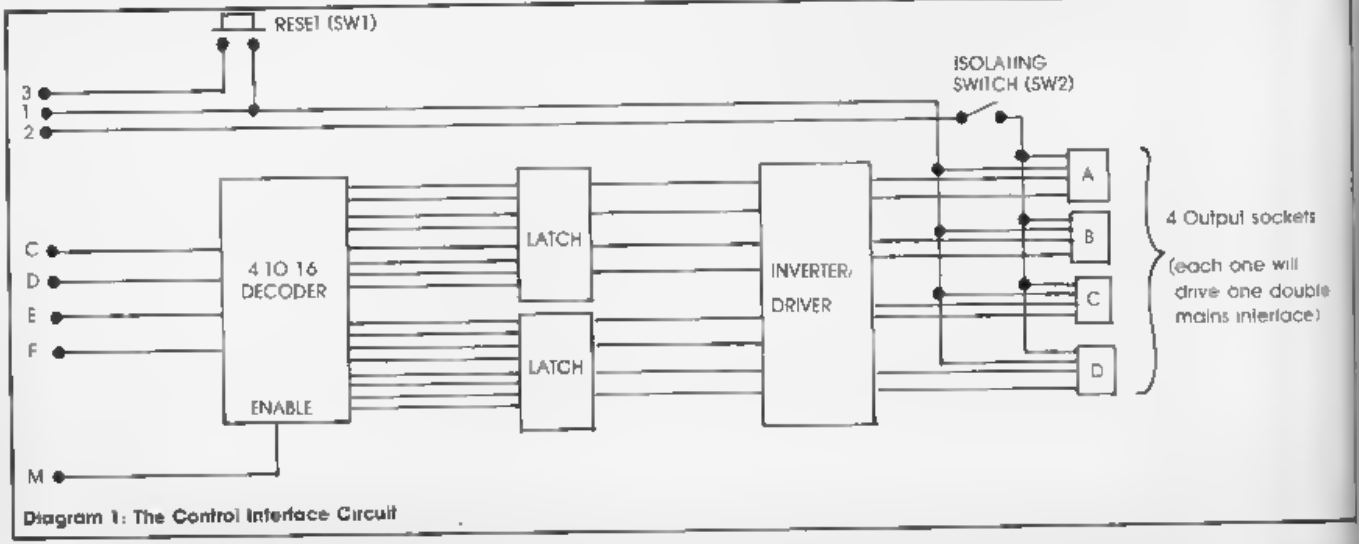


Diagram 1: The Control Interface Circuit

Into the box

The unit is now ready to mount into a suitable case – the one indicated in the parts list will allow both this board and the input board to be mounted in a single box (the input board will be mounted above this one). Having chosen your box you must now mount the output sockets and the isolating switch, as in **Diagram 4**.

If you have mounted more than two mains units in one box you can of course use any suitable output socket, so if you have all eight mains sockets in one unit you could use a nine way D type socket and connect it with just one cable.

The isolating switch enables all outputs to be switched off simultaneously; it also allows the unit to be set up by the computer without any mains devices being switched on accidentally.

I have also included a 'cold start' Reset switch. Pressing this will cause the computer to reset to the initial power on state without actually having to turn the computer off – very useful for recovering from a crash or machine-code loop, though it does reset the Basic pointers too (thus effectively losing a Basic program in memory). Any machine-code programs will be unaffected by a Reset and can be restarted with a SYS command).

Turning on

The unit must be plugged into the computer prior to switching on – connecting it with the power on can easily damage one of the ICs. To test the Control Board, plug it into the computer, then plug the Mains Control Unit(s) into the output sockets and also into the mains.

Switch the computer on, switch the isolating switch on, then test each socket in turn, all mains sockets should be 'ON'. Now type .

POKE56576,15: POKE56577,0

for the 64. Or, for the Vic 20:

POKE37138,15: POKE36136,0

Retest all mains sockets (which should now all be OFF). If either of these tests fails, switch off the computer immediately and check your board very carefully.

If all is well you can now type in the control program – note that there are different versions for the Vic 20 and the 64. This allows you to switch the mains devices on or off by pressing either the + or – keys followed by the

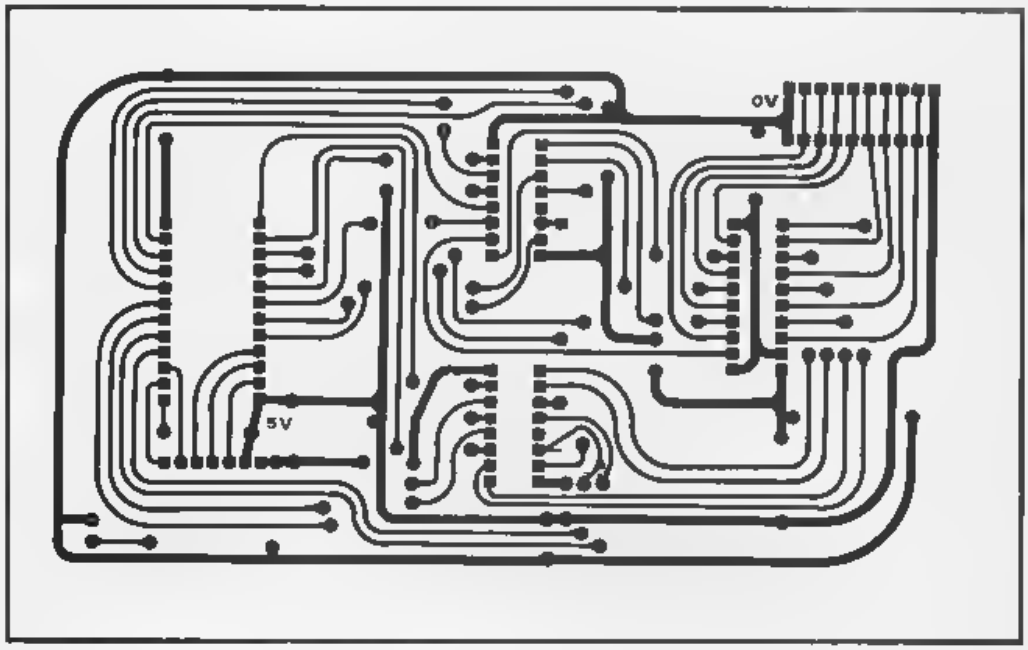


Diagram 2: Layout of the Control Interface PCB

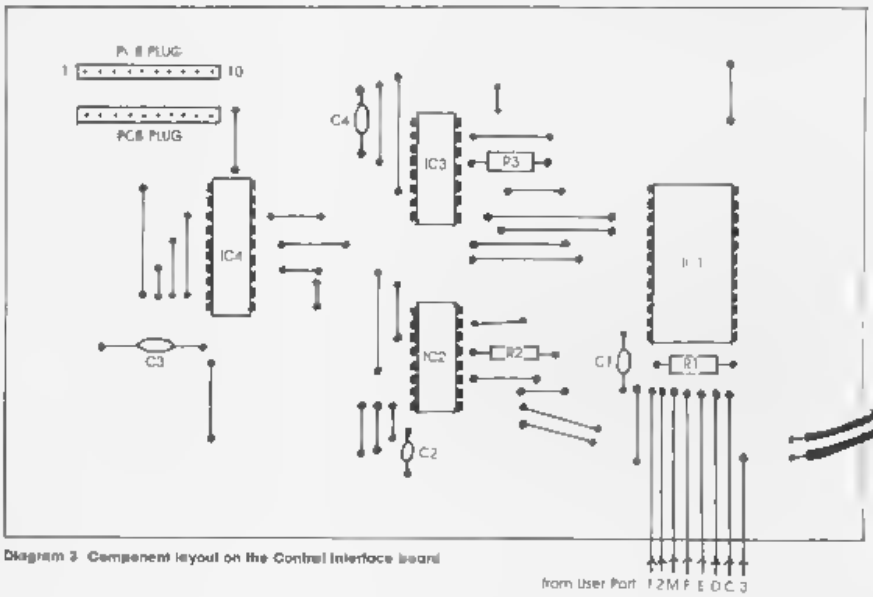


Diagram 3: Component layout on the Control Interface board

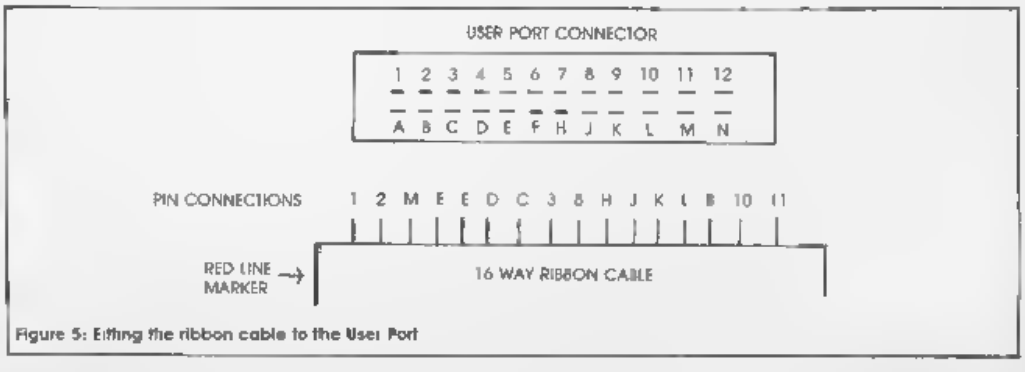


Figure 5: Fitting the ribbon cable to the User Port

device number A screen indicator will show the state of all devices

Once you have typed and saved the program you can complete the final test This checks that the outputs respond correctly, pressing '+4' should turn on mains socket 4 for example, and −4' should switch it off again. Test all sockets in turn and then in combination, if any tests fail then you have either made an error in the circuit board or in typing in the program

Using the Control System

When using the control system the isolating switch should always be OFF until the program is loaded and run This is because the computer sets up the User Port on power-up with all lines set as INPUTs and in any case the state of the devices on the control board is indeterminate when power is first applied. Once the User Port has been set up correctly and all devices switched off, you can turn the isolating switch ON

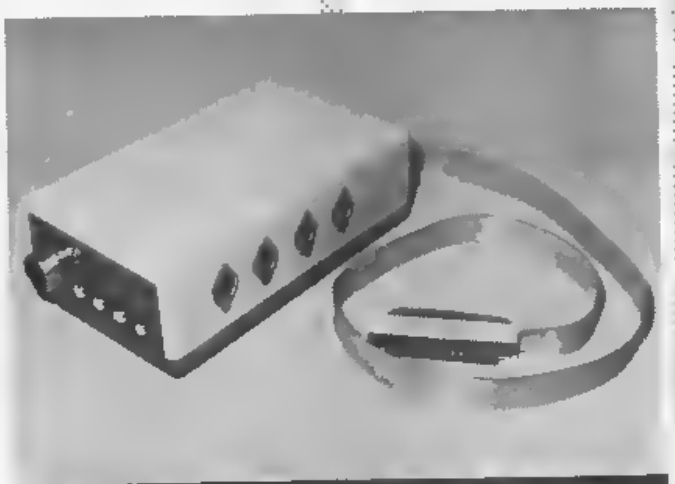
The code needed to use the control system is all contained in the demonstration program. **Lines 150 to 200** set up the control interface and lines 290 to 330 carry out the control functions Note that one line from Port A (PA2) is being used to enable or disable the 4 to 16 decoder chip (CB2 on Vic) Only when this line is set low (0) will the User Port affect the output You can therefore use the User Port for other things without affecting the mains control system while the line remains high (1)

Lines 310 and 330 show its use (it is set up by the DDR at address 56578 for the 64, 37138 for the Vic) By using similar code in your own programs you can set sockets to switch on at certain times of the day or night, switch lights on and off while you are out or turn the heating on at pre-set times

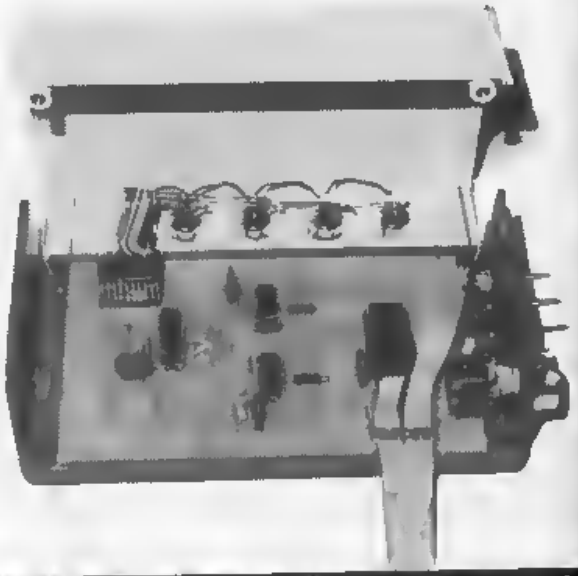
When typing in the programs note that the standard display control codes have been expanded to meaningful strings, eg < CLR> = Clear screen and <CD > = Cursor Down etc You must replace these strings by proper codes

There will be a program at the end of the series to allow you to do all these things in conjunction with the input board as well. In the meantime, the only restriction is your own imagination . .

That brings us to the end of Part 2 of the series; next month I will be covering a commercial unit that allows control through the mains wiring itself and a constructional project to build a remote control system using an Ultrasonic link



The completed prototype unit shown without the isolating switch. (The sockets and switches to the right of the reset switch are for use with the input board)



The interior of the prototype unit showing connections to output sockets

Commercial control units

For those people who would like to expand their computer to control functions but have zero constructional ability and/or facilities, here are details of some of the commercial control units I have managed to find working with the Commodore range of computers

- **L.W Staines & Co.** is producing an eight-bit controller board (**Interface 3**) which could be used for mains control with suitable relays it also has similar **motor control** interfaces for anyone wanting to experiment with robotics. A review unit has been promised, but had not arrived by the time this article was written – if it turns up, details will be included later in the series Prices are from £25 and the suppliers can be contacted at *Unit 2, Roding Trading Estate, London Road, Barking, Essex IG11 8BU* – telephone *01 591 2900*
- **VIC-REL** is a cartridge unit which plugs into the User Port and will control six output and two input lines It is limited to a maximum voltage of 24v for the output lines and you will

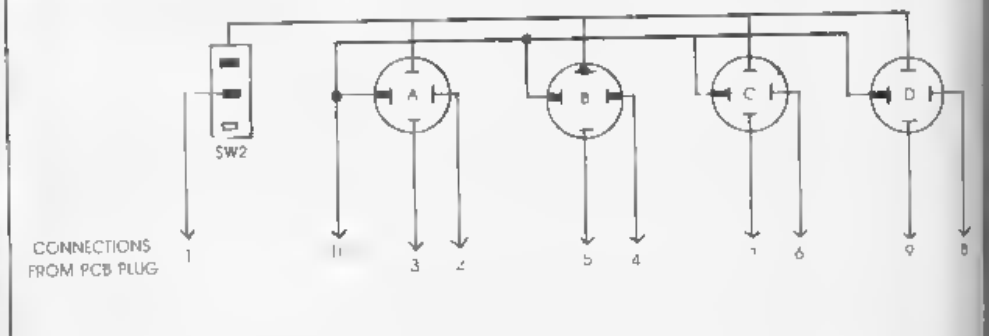


Diagram 4 Mounting the output sockets and the opto-isolating switch

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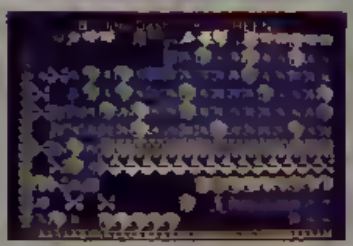

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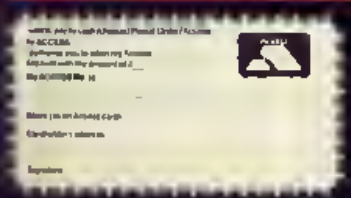

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therefore need some mains relays before you can operate mains devices – even if you wish to drive low-voltage motors and lamps, it's recommended that you use additional relays that can handle the current load for such devices. The input lines operate on 5-12v; 5v is available from connections on the cartridge. The enclosed manual gives you all the information you need to start using it, although a complete beginner might find it a little difficult to follow initially. The unit can be used with both the Vic 20 and the CBM 64, and at £34.95 it is an inexpensive way of experimenting with control I/O. The unit is available from most Commodore dealers or from **Handic Software**, *5 Albert Road, Crowthorne, Berks RG11 7LT* – telephone *0344 778800*.

- **Basicare Microsystems** makes a modular expansion system for the CBM 64 which is intended to include **PERICON** modules (PERipheral CONtrollers). The base units will plug into the expansion port and include many other expansion modules in addition to the controllers. Further details – like the price – will hopefully be available for inclusion later in the series, meanwhile Basicare can be contacted at *12 Rickett Street, London SW6 1RU* – telephone *01-385 2135*.

- **Communicator** is an eight-channel I/O unit designed to work with PET computers, but it shouldn't be difficult (especially if you use a PET emulator program) to convert it to run on the CBM 64. It is a low voltage (8-24v, 300mA per channel) device which can be connected to relays for mains control. The fully built version costs £93.15 (inclusive of VAT and postage), the kit version costs £58.65. Available from **Meltronic Consultants**, *116 Rectory Lane, Prestwich, Manchester M25 5DB* – telephone *061 798 0803*.

- **Scullion** is a complete mains control system with six mains sockets all mounted in a single unit. Facilities include the ability to vary the power to each socket as well as normal on/off operation. Two input lines are also included. The unit plugs into the User Port and comes complete with all necessary connectors. Although primarily designed for use with the Pet, the software could be easily amended to allow use with other Commodore machines. Cost is a rather hefty £261 (all inclusive), this one is also available from **Maktronic Consultants**.

- **GEM Systems** produces a **Mains Control System** at £69.95. No details had been received by the time we went to press, but again we'll try to include them later. Meanwhile, GEM can be contacted at **2 Crawford Road, Hatfield, Herts**.

```
10 REM ********************************
20 REM MAINS CONTROL PROGRAM (PART 1)
30 REM (FOR VIC-20)   BY CHRIS DURHAM
40 REM ********************************
45 IF PEEK(56)<30 THEN CM=5:BB=55:SM=8096:@DTO50
47 CM=38400:SM=7680:REM SET SCREEN & COLOUR MAP LOCN DEPENDING ON MEMORY
   SIZE
50 DEF FNF(X)=SM+22*(X-2):DEF FNN(X)=SM+441+(X-2)
60 POKE36879,25:POKE198,1
70 PRINT"{CLR}{GRN}{CD}MAINS CONTROL PROGRAM{BLU}"
80 PRINT"{RVS}                    {OFF}"
90 PRINT"TO USE MAINS DEVICES:"
100 PRINT"{CD}TYPE  {RED}+{BLU}  (ON) OR  {RED}-{BLU}  (OFF){FOUR CRSR DOWN}"
110 PRINT"DEVICE NUMBER (1-8)"
120 PRINT" {CD}{RED}+2 {BLU} TURNS ON  DEVICE 2"
130 PRINT" RED -2 BLU  TURNS OFF DEVICE 2"
140 PRINT" {CD} "{RVS}"                    "{OFF}
150 POKE37178,15:POKE37148,PEEK(37148)AND223:REM SET DDR AND CB2
160 REM ENSURE ALL OUTPUTS OFF AT START
180 FOR A=8 TO 15:POKE37136,A
190 FOR DL=1 TO 5:NEXT DL,A
200 POKE37148,PEEK(37148)OR32:REM LATCH OUTPUTS
210 GOSUB 1000:REM SET UP DISPLAY
220 REM START OF LOOP
230 GET A$:IF A$="" THEN 230
240 IF A$="-" THEN END:REM TYPE  SHIFT E  TO END PROGRAM
250 IF A$ <"+" AND A$ <> "-" THEN 230
260 GET B$:IF B$="" OR B$=A$ THEN 260
270 V=VAL(A$+B$):IF V=0 THEN 230
280 IF V<-8 OR V>8 THEN 230
290 IF V<0 THEN POKE37136,(ABS(V)-1)OR8
300 IF V>0 THEN POKE37136,V-1
310 POKE37148,PEEK(37148)AND223:REM ENABLE OUTPUT
320 FOR A=1 TO 5:NEXT A:REM DELAY
330 POKE37148,PEEK(37148)OR32:REM LATCH OUTPUT
340 IF V<0 THEN CN=32:CF=160:GOTO 360
350 CN=160:CF=32
360 POKEFNN(ABS(V)),CN:POKEFNF(ABS(V)),CF
370 GOTO 230:REM END OF LOOP
999 REM - GRN  BELOW IS CSHIFT + A (GRAY 1)
1000 PRINTSPC(9)" GRN =DEVICE STATE INDICATOR":PRINTSPC(8);
1010 FOR A=1 TO 8
1020 PRINTA;
1030 POKE FNE(A),160
1040 POKE56062+(A*3),10
1050 POKE56063+(A*3),5
1060 NEXT A:PRINT
1070 RETURN

READY.
```

```
10 REM ********************************
20 REM MAINS CONTROL PROGRAM (PART 1)
70 REM (64 VERSION)   BY CHRIS DURHAM
80 REM ********************************
50 DEF FNF(X)=1790+(X*3):DEF FNN(X)=1870+(X*3)
60 POKE52281,15:POKE198,1
70 PRINT"{CLR}{GRN}{CD}{CD}  MAINS CONTROLLER PROGRAM{BLU}"
80 PRINT"                              {CD}{CD}"
90 PRINT"        TO OPERATE MAINS DEVICES:"
100 PRINT"{CD}     TYPE  {RED}+{BLU}  (ON) OR  {RED}-{BLU}
    (OFF) FOLLOWED"
110 PRINT"       BY THE DEVICE NUMBER (1-8)"
120 PRINT" {CD}E.G. {RED}+2{BLU} TURNS ON  DEVICE NUMBER 2"
130 PRINT"      {RED}-2 BLU{ TURNS OFF DEVICE NUMBER 2"
140 PRINT" {CD}"{RVS}"                              "{OFF}
150 POKE56579,15:POKE56578,4:REM SET DATA DIRN REGISTERS
160 REM ENSURE ALL OUTPUTS OFF AT START
170 POKE56576,PEEK(56576)AND251
180 FOR A=8 TO 15:POKE56577,A
190 FOR DL=1 TO 5:NEXT DL,A
200 POKE56576,PEEK(56576)OR4:REM LATCH OUTPUTS
210 GOSUB 1000:REM SET UP DISPLAY
220 REM START OF LOOP
230 GET A$:IF A$="" THEN 230
240 IF A$="-" THEN END:REM TYPE  SHIFT E  TO END PROGRAM
250 IF A$ <"+" AND A$ <> "-" THEN 230
260 GET B$:IF B$="" OR B$=A$ THEN 260
270 V=VAL(A$+B$):IF V=0 THEN 230
280 IF V<-8 OR V>8 THEN 230
290 IF V<0 THEN POKE56577,(ABS(V)-1)OR8
300 IF V>0 THEN POKE56577,V-1
310 POKE56576,PEEK(56576)AND251:REM ENABLE OUTPUT
320 FOR A=1 TO 5:NEXT A:REM DELAY
330 POKE56576,PEEK(56576)OR4:REM LATCH OUTPUT
340 IF V<0 THEN CN=33:CF=160:GOTO 360
350 CN=160:CF=32
360 POKEFNN(ABS(V)),CN:POKEFNF(ABS(V)),CF
370 GOTO 230:REM END OF LOOP
999 REM - GRN  BELOW IS CSHIFT + A (GRAY 1)
1000 PRINTSPC(9)" GRN =DEVICE STATE INDICATOR":PRINTSPC(8);
1010 FOR A=1 TO 8
1020 PRINTA;
1030 POKE FNE(A),160
1040 POKE55862+(A*3),10
1050 POKE55863+(A*3),5
1060 NEXT A:PRINT
1070 RETURN

READY.
```

Components list

Resistors
R1, 2, 3, – 1KΩ

Capacitors
C1, 2, 3, 4 – 0.1µf

ICs
IC1 – 4515B
IC2 3 – 4043B
IC4 – MM74HC240N*

Switches
SW1 – SPST Press Sw (non-latching)
SW2 – SPST (or SP on/off)

Hardware
1 metre 16-way Ribbon cable
PCB materials
Vero Box 103 (Maplin code LL00A)
Ribbon cable clips
3-pin DIL sockets – Qty 4†
0.1" 10-way PCB plugs – Qty 2†
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Minicon Terminals (for above) – Qty 10†
User Port connector†

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Taskset *in profile*

The view from Bridlington

by Bohdan Buciak

Taskset is a relative newcomer to the make or break world of home computer games; it's been trading for little over one year. But its protagonists cut their teeth earlier than most by producing games for real arcade machines.

Now they've turned their collective attention exclusively to the Commodore 64 and have produced a string of eccentric yet original games that seem to pop up regularly in the games charts. Bohdan Buciak took the stopping train to sunny Bridlington to meet the creators of *Rankin' Rodney* and *Bozo*.

Andy Walker was born just down the road from Taskset's new premises on Bridlington High Street. He's managing director of that company, and probably falls into the local-boy made-good category, whether he likes it or not. He's now in his mid thirties, sports a Noel Edmunds hairstyle and beard and has done time working as a civil servant. Not an environment conducive to promoting games-mania. So how did he get hooked on computer games?

"I spent a considerable number of years working with computers at a government electronics centre", he declares cautiously. That was a few years back, when microcomputers were just beginning to make their attack on the mainframe and minicomputer market.

Walker saw the potential immediately and became fascinated by micros to the point of distraction. But his enthusiasm couldn't persuade his superiors to send him on small systems courses to find out more about micros. Walker considered that to be somewhat shortsighted. "they didn't believe the future lay in small systems." So he built an antipathy towards the Civil Service and started building his own micros.

He eventually left, having decided that he wanted to do nothing more than devote his time to writing video games. He managed to inspire another programmer and a video artist with his own brand of enthusiasm and together they set up AWL Electronics, a company who's major claim to fame was writing games like *Andromeda* and *The Pit* for the true games arcade consoles.

From arcade to home

But nothing seems to last long in the computer games industry. "The writing was on the wall for arcades", recalls Walker. "People were ripping each other off blind producing anything but original offerings. In any case, the growth market was in home computers – you can't put a keyboard in an arcade." By that he means the sophisticated game control you get from a keyboard couldn't be incorporated into an arcade machine – keyboards are a mite too delicate for arcade zappers.

Andy Walker's arcade experience told him that the two ingredients for success are spectacular graphics and good sound. But that wisdom left him with nowhere to go, a home computer that could do justice to those two requirements still hadn't appeared – as far as Walker was concerned, anyway. Maybe his standards were too high.

But he was immensely impressed when the Commodore 64 appeared on the scene, its sprite graphics and its VIC chip. "We bought a few 64s and took them apart, and found that the VIC chip does the same as a board-full of chips on an arcade console – what an awakening for me." Walker will, without hesitation, produce a circuit board the size of a drinks tray for anyone who doesn't believe him.

And his views haven't changed since. "the 64 really is the best value machine on the market. The technology you're buying for the money is terrific. The screen editor is terrific too." Trouble is, Walker can't comment on its Basic, he doesn't know the language. But on the strength of what he saw, Walker adopted the 64 as his main machine.

So Taskset came into being (at a time when Jetpack had just appeared on the Spectrum), with a team of programmers nurtured in

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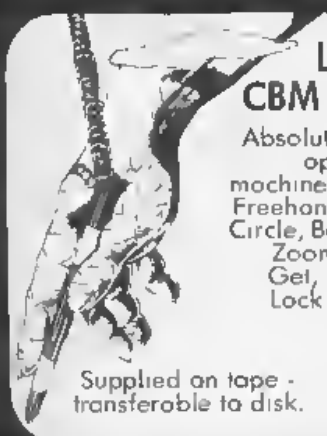

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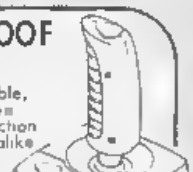

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COMPUTER PRODUCTS

Profile

arcade work, working for a machine they reckoned could display their talents to the full But why choose an unusual name like Taskset? Simply because they needed to become a company quickly, so they bought a name off the shelf Walker felt it sounded reasonable

Bags of ideas

Taskset didn't need to adapt its working routines to write for the Commodore 64, the team carried on originating games in their accustomed way "We carried on operating what we call an ideas bag," explains Walker. The bag is actually a board hanging behind Walker's desk upon which people scribble their ideas 'We also run regular brain-storming sessions in which lots of weird and wonderful ideas get thrown around " But the casualty list seems high – 'about one in every twenty ideas actually becomes a game"

And the real mainstay for Walker is originality; probably a hangover from his experience of arcade games and something he'd really like Taskset to become known for 'You've got to be able to junk ideas, even if someone comes out with a game that you've already put a great deal of work into.' Walker reckons he's already done that – probably not many other games houses could make the same claim.

And the theorising continues 'apart from originality what we'd aim for in a game is relatively simple rules but a high standard of presentation There's no reason why graphics shouldn't be good and music shouldn't keep tempo with the action "

And do Taskset's games live up to all those aims? On Cosmic Convoy, its first game, Walker has doubts The most he'll say about it is that it was an original offering. But he'll really wax lyrical when pressed about *Pipeline* and *Jammin'*, both of which have been remarkably successful.

"Pipeline came out of an ideas bag we had when we were still writing for the arcades. We'd had a burst pipe at the office one night, dripping water perilously near to some expensive hardware The plumbers came next morning and it developed into a really crazy situation – workmen galore, one guy holding a spanner while three others watched " So the idea went into the bag and eventually surfaced, albeit a little transformed

"It's a simple game but it was a long way advanced over its competitors, especially in terms of music", enthuses Walker He plays the game almost reverently "so simple, the idea is to engender panic; you can win if you keep your head, not many people get past pipe ten..."

Rodney and Bozo

Pipeline set the trend for a succession of games characters, like Rankin' Rodney in *Jammin'*. That game stemmed from Tony Gibson, Taskset's reggae-loving musician, who hero-worships the late Bob Marley hence the game's strong red, gold and green colours

Walker probably reveres that game even more "nobody had driven the 64's sound chip like that before *Jammin'* has a drum, bass and melody line, and it all keeps time with the action, it's truely interactive There's no killing involved either, just collecting instruments so that they'll play to you And the baddies are just bum notes "

Whether you like the game or not, there's no denying that both the music and graphics are brilliant The tunes either obsess you or drive you mad.

Then came Bozo, the unsteady anti-hero of *Bozo's Night Out* That's Taskset's most original and bizarre offering to date But games that include a drunk, a bunch of muggers and sweet painted ladies will inevitably offend somebody somewhere

Walker is quick with his defence "Bozo is a reasonable idea. And I don't think there's anything to alienate youngsters Alcohol is never mentioned – it's wobble-juice An awful lot was cut out so as not to be offensive" One idea that didn't quite make it was a bladder that would fill up as Bozo drank the problem of emptying it proved insurmountable – probably a mixed blessing

That prompts Walker to risk a few generalisations like, "there's a lot of arguements for us writing what we want For example, we'd write a political game whether it offended a political party or not. We are our own masters We back games with our own money, and you please yourself whether or not you buy them "

That assertion of independence seems to pervade the writing process itself "We never advertise for games contributions and we don't buy anything in. If a game is not written here, it doesn't get published '

And writing itself is always done as a team. 'I'm not saying individuals aren't important," asserts Walker "It's just that the process is too big for individuals The best way forward for Taskset is to gather a team of specialists; everybody is good at what they do "

Getting to the chips

Having decided to use an idea, what are the mechanics of writing a game? Walker quickly asserts that all writing is done in machine code and nothing else "I don't like anything getting between me and the chips He doesn't know Basic anyway and probably doesn't want to

To make the writing process easier, Taskset has invested heavily in development hardware Such as the Apple II micros (they run with the 6502 processor similar to the 64's) they use as development machines running the Merlin assembler package Then there's the Omninet local area network That connects the input/output ports of all the Apples, enabling them not only to transfer programs and data to each other but to share a 10 megabyte Winchester hard disk which stores all the work done and can be accessed by anyone on the network.

Not only that, Taskset has spent a great deal of time writing its own utilities. "We couldn't buy the utilities we wanted so we wrote them ourselves they all link together We've written a compact machine-code monitor too." Another example of that much-prized independence?

More recently, Taskset discovered the Koala Pad graphics tablet and is now using it to generate graphics, having written their own utilities for it "The impact has been enormous," enthuses Walker "We can generate in a day what would have taken a week to complete That means we can afford to experiment with ideas much more '

Walker insists that the new utilities won't make Taskset pro-

Storm Warrior
and agility
'Storm
Storm Warrior is a 12
using 58K of RAM.
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duce games more quickly "We can't produce games quickly because we're a small company, and machine code won't rush We don't want to either; I don't want Taskset to become a big conglomerate We're staying small so that we can all be Indians" by that he probably means everybody stays a part of the team and gets equal shares in the glory

But Taskset has grown despite these assertions, and Walker has taken on an accountant and a marketing man, suitably called Andy Nutter, to allow him to do what he enjoys – write games And probably to shirk the mundane yet essential job of administration

Computer games is now big business, no longer the cottage industry of yore And Walker won't hesitate to stress the importance of good management, especially when bankrupicy casualties among software houses are becoming uncomfortably regular But he'll claim immaturity as the main cause of a company's demise rather than the activities of organised games counterfeiters

"I don't think piracy is responsible for any software house's downfall We've been badly hit too And we're doing something about it I hate it because it involves me in a lot of work and money, and that offends me" What he's doing is embarking on a long and tortuous period of legal action. Taskset could join the Guild of Software Houses and take joint action But Walker hasn't got round to it "It's just not the all-important problem."

Making plans

With the future of some software houses being abruptly curtailed, what kind of plans has Walker made for Taskset? "We have to be international in our outlook It's no good being in just one country You've got to be in Europe, which means providing games on disk because the disk market is much bigger there We've also got links with America from the old days, which we're using to good effect."

America is probably a thorn in the side to many British games houses as American software sells rather well in this country. Walker asserts it doesn't bother him "It was bound to happen. The games are generally of very good quality and it's good healthy competition So we can only welcome a move like that The real winners are the customers They're getting a colossally good deal"

Time for some more home spun Walker philosophy "Customers have a lot of power If only they'd realise it Thay have the power to make or break software houses For example if people don't like Bozo it would put them off everything else we do" And inverting that theorem Bozo fans will invariably turn to Taskset for future games

So Taskset is determined not to produce inferior games It's all a question of credibility Or, as Walker puts it "we want to be known for original entertainment, and I'm quite happy with that as my major aim We're not interested in business or utility software We write games and we think we're good at it"

But will Taskset's future games continue to be exclusively for the Commodore 64? After all, Commodore has just announced the 16 and Plus 4 models Does Walker regard those as true gaming machines? The answer is characteristically abrupt. "I won't even look at the 16, and with the Plus 4 the answer's a qualified 'no' It's got no sprites and they've thrown away the SID chip It's madness and a big step back for the gaming world Neither of them will sell better than the 64 And the 64 will be around for a long time Commodore couldn't kill off the demand if they wanted to"

Certainly, software houses continue to churn out innumerable games for the 64. Taskset doesn't work quite that quickly but it is currently launching two new games The first, Poster Painter, involves a character called Bill Stickers And if Bill reminded you of a cuntact from a seaside postcard, you won't be surprised that the second game is called Seaside Special – must be something in the Bridlington air.

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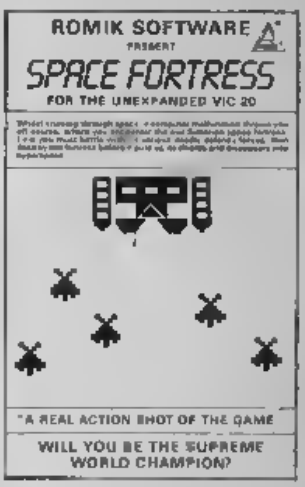
Games

Our regular round-up of games reviews

We get to see a lot of games here at Commodore User, so many in fact that we can't handle all the reviewing ourselves – we farm out some of them, which is why our reviews have someone's initials at the end of them. We look at everything we get, but we don't necessarily print all the reviews we write: instead, we tend to stick with (a) all the best games we come across and (b) those games that you're most likely to find in the shops or the mail order ads.



SPACE FORTRESS
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You are a space games fan with a basic Vic looking for some real action. *Space Fortress* is certainly a good "shoot-em-up" requiring timing, together with an awareness and anticipation of the enemy's tricky flight paths. There are four waves: the green suicide squad, blue sidewinders (these and the following drop bombs), cyan swoopers and lastly, purple avengers.

Each formation attacks in a different manner in an effort to relieve you of a life. Your demise is marked by effective "thumping" sonics standing out from the background noise of cosmic wind. The high point is obviously the appearance of the eponymous "awesome mothership": Scrunch it quickly before the force field has a chance to knit, then take the next step towards level 20. *LS*

Romik

Presentation:	■■■■
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■□

SCREEN SCENE

SPACE SWARM
Vic-20 (unexpanded)
Joystick only
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This is a pale shadow of *Arcadia*, although at least the playing area is wider and the top five scores are retained. The vertically expanded screen displays the countdown which must be survived by your largish green spaceship before the next wave is summoned up.

The first three opponents are alien craft with a tendency to drop bombs and do present a challenge, but the so-called fireballs in wave four are non-evident. Not so the meteors on the fifth frame as they race in at all angles, calling for constant evasive action. After that it's round again but with your opponents having undergone a popular explosion. Unlike *Arcadia* you cannot move vertically, also your rocket slows down towards the end of each phase thereby increasing the likelihood of a collision.

Again compared to big A this alien forms are dull (sorry chaps). More carping: is the insert supposed to illustrate the game (remotely) and who conjured up the sonics? In isolation not bad but *Space Swarm* really does suffer by comparison to an established best seller. *LS*

Software Projects

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

ALPHOIDS
Vic-20 (unexpanded)
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Price £5.99

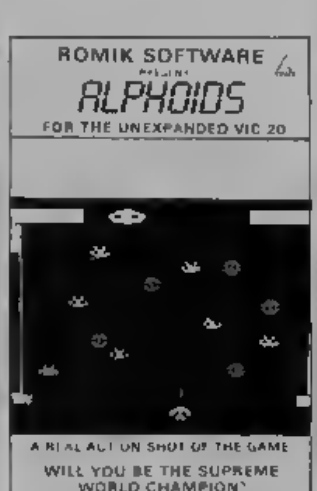
Obviously related to Centipede but with sufficient innovations to distance itself from the typical cover jobs. A cyan segmented space worm is wending it's way towards you, with green meanies for company as your laser chops up the worm, slices of it become detached and pursue independent courses. Green and purple cosmic toadstools remain in the spots where you scored hits, taking several more shots to be finally disintegrated. Wipe either form of adversary from the black sky and they spring back more numerous than ever.

A spinning fuel tanker crosses the top of the screen spilling acid rain, hit this ship to gain extra fuel. Apart from maintaining the energy levels you will also need to ensure that your laser tubes don't overheat, to advise you on both critical requirements there are guages on either side of the screen. To do well you will have to balance the need for warding off aliens and collecting fuel against resting-up your weapons systems, much as you might enjoy executing endless banana shots as allowed for by the program.

Plenty to do in this action packed space battle with very good use of colour and excellent sound, that's if you like the "Star Wars" theme. *LS*

Romik

Presentation:	■■■■■
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■■



A REAL ACTION SHOT OF THE GAME

WILL YOU BE THE SUPREME WORLD CHAMPION?

INSECTOR
Vic-20 (unexpanded)
Joystick only
Price £5 99

An adaptation of *Defender* which will only prove suitable for those able to cope with ultra hectic ev erything-happening-everywhere-simultaneously scenarios A black horizontally expanded screen (the Vic can still teach the 64 a trick or two!) at first displays two yellow, bomb dropping mega-insects, just out of range of your red wedge shaped interceptor soon to stalwartly defend the purple humans cowering in their burrows.

Only two? Yes but as the green landers scoop up specimens of homo-sapiens and, perchance evading your withering laser fire, reach the top of the screen they will mutate to increase the insects' numbers Soon yellow pods will appear despatched by the insects, only to engender cyan spreaders which vastly increase the shower of bombs raining from above, in fact there comes a time when the picture resembles a technicolour snow storm.

After a few trial runs, you get down to business, the addictive quality of the game will dawn on you . simply this — surely you can contain the situation without the whole thing careering beyond your control. next time

Comprehensive instructions precede the main program which features sixteen speed levels, thumping, pulsating noises, "howling" wind effects and an interesting screen display. If you fancy a challenge demand a demo of *Insector*

LS

Romik

Presentation:	■■■■
Skill level:	■■■■
Interest:	■■■■
Value for money:	■■■■

FALCON FIGHTER
Vic-20 (unexpanded)
Joystick or keyboard
Price £6 00

A horribly addictive example of *Skramble* adapted for a spartan 3 5K I managed five stages at speed 1 (choice of four speeds) and was unable to detect any flickering often associated with scrolling landscapes on the Vic The border changes colour to match that of the sector, which makes things easy on the eye and sets off the white flight area nicely.

The first stage, green mountains, gives the opportunity to bag a few ground targets and gain practice in avoiding the omnipresent multi-colour space mines. The blue cavern provides the challenge of purple meteors, then out in the open again, red signals the presence of missiles Sector four, purple, is well peppered with bobbing saucers, while another blue cavern (still with mines) revamps the tricky missiles That leaves three sectors unexplored, but I'm willing to bet there is no maze

The explosions are audial only, unless you count rapidly alternating screen colours, there is no debris The high decibel background noises are supplemented by "plumeting bomb" sounds and the occasional bell as your rocket collides with obstacles

Apart from stocking-up with fuel in the time honoured manner, ammo dumps have to be blasted for a supply of bombs, run out of these and you will most decidly be in a *Catch 22* situation

LS

Interceptor

Presentation:	■■■■□
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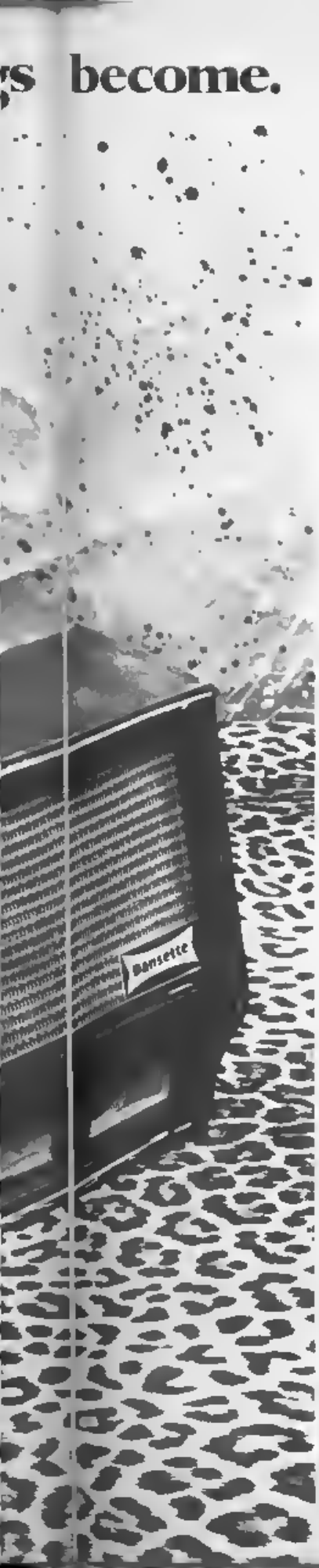

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When you see...	It means...	And you...
[CU]	cursor up	press the cursor up key (shifted)
[CD]	cursor down	press the cursor down key
[CL]	cursor left	press the cursor left key (shifted)
[CR]	cursor right	press the cursor right key
[HOM]	cursor to the top lefthand corner	press the HOME key
[CLS]	clear	press the CLR key (shifted)
[DEF]	insert	press the INSert key (shifted)
[BLK]	change to black	press the BLK key (CTRL and 1)
[WHT]	change to white	press the WHT key (CTRL and 2)
[RED]	change to red	press the RED key (CTRL and 3)
[CYN]	change to cyan	press the CYN key (CTRL and 4)
[PUR]	change to purple	press the PUR key (CTRL and 5)
[GRN]	change to green	press the GRN key (CTRL and 6)
[BLU]	change to blue	press the BLU key (CTRL and 7)
[YEL]	change to yellow	press the YEL key (CTRL and 8)
[REV]	reverse on	press the RVS ON key (CTRL and 9)
[OFF]	reverse off	press the RVS OFF key (CTRL and 0)
[SPC]	space	press the space bar repeat the specified number of times

[G<key] **press specified key together with CBM key**

[G>key] **press specified key together with SHIFT key**

When you see any of these codes prefixed by a number you must press the appropriate key the same number of times

for example [3SPC] means – press the spacebar three times
or

[5CD] means – press the cursor down key five times

These listings we generally run out on a letter-quality printer though, and conventional graphics can't be handled on a daisywheel. So some listings are done on a Commodore printer, in which case you may see the standard control codes

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Somewhere, buried deep in the lost caverns of Machu Pichu, Peru, lies the stolen and, of course, priceless Raj Diamond, along with a hoard of missing gold bars.

Harry's little niece Rhonda and Quickclaw, her cowardly cat, are supposed to be with him, but they strayed away and are lost in the bowels of the caves.

A wealthy university has asked him, while he's cleaning this mess up, to capture an elusive stone-age cave rat.

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He just has to avoid the occasional poisonous frog.

Oh yes. And the wickedly clawed condors.

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Hi-res Plot

by Jason Dobbs

This neat little program allows you to use a joystick to draw on a cut-down 152 by 160 hi-res screen, and produce a printout of your work. But you'll need at least 8K of expansion for your Vic. According to Jason Dobbs, the program works well with the Commodore 1515 printer but it should also work with newer Commodore printers.

Because the pixel on the screen is rectangular rather than square the printout is usually a little longer than the picture on the screen

To run the program, you must put the start of Basic memory to 8192 That's not too difficult, you merely enter

POKE44,32: POKE8192,0: NEW (return)

before you load the program itself The program takes a little time to initialise, but you should eventually see a blue screen, a green border and a yellow cursor position If those colour combinations don't please you, they can be altered by changing the values in Lines 20 and 1005 In both cases, you need to change the number immediately preceding the last colon

To operate the program, you use the joystick A few special keys are used too:

- P' lets you print your design
- CLR' is used to clear the screen (be patient, it takes a little time)
- Keys from 1 to 9 are used to change the amount the cursor moves in one step
- F1 draws a line between the spot where F1 was pressed and the spot where you pressed the fire button Pressing the fire button in the same way but without pressing F1 rubs out rather than draws

```
10 DIMA$(23) PRINT"[CLS]" POKE36867,149 POKE36869,205 POKE36866,19 POKE36865,44
POKE36864,14
20 FORT=0TO191 POKE4096+T,T POKE37888+T,7 NEXT
30 GOSUB1000 F=1
50 WW=1 GETA$ IFA$=""THEN180
60 IFA$="P"THENGOSUB1100 GOTO50
70 IFA$=CHR$(19)THENGOSUB1000 GOTO50
80 IFA$=CHR$(133)THENX1=X Y1=Y GOTO150
90 IFVAL(A$)>0THENF=VAL(A$)
100 A=PEEK(37137) POKE37154,127 B=PEEK(37152) POKE37154,255 IF(AAND32)=0THENWW=-
2
110 X=X+(FAND(BAND128)=0)-(FAND(AAND16)=0) Y=Y+(FAND(AAND8)=0)-(FAND(AAND4)=0)
120 GOSUB1010 GOTO50
150 WW=-2 A=PEEK(37137) POKE37154,127 B=PEEK(37152) POKE37154,255 IF(AAND32)=0TH
ENI80
160 X=X+(FAND(BAND128)=0)-(FAND(AAND16)=0) Y=Y+(FAND(AAND8)=0)-(FAND(AAND4)=0)
165 GETA$ IFVAL(A$)>0THENF=VAL(A$)
170 GOSUB1010 GOTO150
180 WW=0 X2=X Y2=Y IFX1-X2=0THENFORY=Y1TOY2STEPSGN(Y2-Y1) GOSUB1010 NEXTY GOTO50
185 G=(Y1-Y2)/(X1-X2) IFX2-X1<0THENG=-G
190 FORX=X1TOX2STEPSGN(X2-X1) FORY=Y1TOY1+GSTEPSGN(G) GOSUB1010 IFY=Y2ANDX=X2THE
NY=Y1+G
210 NEXTY Y1=Y1+G NEXTX Y=Y2 X=X2 GOTO50
1000 FORT=5120TO8160 POKET,0 NEXT A$(1)="" FORT=1TO160 A$(1)=A$(1)+CHR$(128) NEX
TT
1005 FORT=2TO23 A$(T)=A$(1) NEXTT POKE36879,0 FORT=1TO100 NEXTT POKE36879,239 RE
TURN
1010 X=INT(X) Y=INT(Y) IFX<1THENX=1
1020 IFX>151THENX=151
1030 IFY<1THENY=1
1040 IFY>159THENY=159
1050 U=INT(Y/16) V=INT(X/8) S=19*U+V R=VAND15 C=VAND7 M=5120+16*S
1055 POKEM+R,2↑(7-C)ORPEEK(M+R)
1060 A=INT((Y/7)-.01) A=A+1 W$=MID$(A$(A),X,1) W=ASC(W$)
1070 B=2↑((Y-7*(A-1))-1) W=WORB IFWW=-2THENW=W-B POKEM+R PEEK(M+R)-2↑(7-C)
1080 N$=LEFT$(A$(A),X-1) N$=N$+CHR$(W) A$(A)=N$+RIGHT$(A$(A),LEN(A$(A))-X)
1090 RETURN
1100 CLOSE1 OPEN1,4 FORT=1TO23 PRINT#1 CHR$(A)A$(T) NEXT RETURN

READY.
```

Escape

by Rupert Willard

Don't be fooled by this title, this is a version of that screen classic and hardy perennial game, *Breakout*, for the unexpanded Vic. Of course, it doesn't incorporate the intricacies of play you'd expect from the original. And it ends as soon as you've broken out at the top of the screen.

But there are some nice touches like the authentic pinging sounds, a high-score facility, choice of up to nine serves and the full quota of six barriers to bust through. Pressing 'Z' moves the paddle to the left, and 'C' to the right.

```
5 PRINT"[CLS][WHT]" POKE36879 9
6 PRINT" THIS IS A GAME OF"
7 PRINT"[4SPC][REV][WHT] ESCAPE [OFF]" PRINT PRINT"THE Z[DC]KEY MOVES LEFT  PRI
NT"THE C[6DC]KEY MOVES RIGHT"
9 PRINT"YOU MAY CHOOSE THE" PRINT"[CD]NUMBER OF CHANCES" POKE198 0
10 INPUT"[CD]YOU WANT ";C
11 IFC<1ORC>9THENGOTO10 E=C
14 PRINT PRINT" HIT ANY KEY TO PLAY"
16 GET# IFA#<>""THEN16
17 GET# IFA#=""THEN17
18 POKE36879,15 V=20 DY=-1 GOSUB1000 PRINT"[CLS]"
19 FORJ=2TO7
20 FORI=0TO20
30 POKE38444+I+(J-2)*22 J
40 NEXTI NEXTJ
50 FORI=7TO131
60 POKE7724+I,160
70 NEXTI
75 POKE7680+X+22*Y,81
80 POKE8142+D,98
90 POKE8143+D 98
95 PRINT"[HOM]SCORE ";SC
97 PRINT"[HOM][14CR]LIVES=";C
100 POKE8144+D,98
110 S=PEEK(197)
140 IF5=33THEND=D-1 POKE8145+D,32
150 IF5=34THEND=D+1 POKE8141+D ^2
160 IFD<0THEND=0
170 IFD>19THEND=19
180 POKE 7680+X+22*Y,32
190 X=X+DX
200 IFX<1ORX>20THENDX=-DX POKE36876,220
210 Y=Y+DY
220 IFY=22THEN300
225 IFY=0THEN400
230 IFPEEK(7658+X+22*Y)=160ANDDY=-1THENDY=1 POKE36876,230 POKE7658+  22*Y,32 SC=
SC+12
240 IFPEEK(7702+X+22*Y)= 3THENDY=-1 POKE36876,240
250 POKE36876 0
260 GOTO75
300 POKE36874 140
310 FORI=0TO1000 NEXT
320 POKE36874 0
330 C=C-1
340 PRINT"[HOM][13CD][CR]YOU HAVE ";C,"CHANCES[6SPC]LEFT"
343 FORI=0TO1500 NEXT
345 FORK=0TO34 POKE7922+K 32 NEXT
350 IFC>0THEN Y=20 DY=-1 GOTO 31000 GOTO75
355 GOTO460
400 FORU=0TO5
410 POKE36875,240
420 FORI=1TO90 NEXTI
430 POKE36875,0
440 NEXT
450 POKE36878,15 POKE36876,250 FORI=1TO100 NEXT POKE36876 200 FORI=1TO100 NEXT
451 POKE36876,0 GOTO14
460 POKE36878,0
470 POKE36879,42 PRINT"[CLS][WHT]"
475 PRINT"[6CD]YOU SCORED ";SC
480 IFSC>HSTHENHS=SC
490 PRINT"[2CD]THE HI-SCORE FOR  PRINT"TODAY IS ";HS SC=0
495 FORI=1TO4000 NEXT
500 GOTO5
1000 X=INT(RND(1)*20)+1
1010 DX=INT(RND(1)*3)-1
1020 IFDX=0THEN1010
1030 RETURN

READY.
```

Level 9 Adventures are superbly designed and programmed, the contents first rate.

YOUR 64 June 84

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c = Cassette Ca = Cartridge D = Disk

Three scrolls for the Vic

by Neil Phillips

Ever wondered how professional programmers produce those dazzling scrolling effects? Neil Phillips reveals all with these three short routines.

Horizontal scroll makes a single line of text move across the screen. Vertical scroll does the same but this time it's up and down. Finally, there's a routine to scroll the whole screen towards the top. Happy scrolling

Vertical scroll

```
1 A$="{BLK}THIS IS AN EXAMPLE OF A VERY SIMPLE WAY TO ADD VARIETY TO YOUR PROGRA
MS WITH "
2 B$="VERTICAL SCROLL{NO.{2SPC}"
3 C$="{RED}IT COULD EASILY BE INCORPORATED INTO A PROGRAM AS A SUBROUTINE.{2SPC}
"
4 D$="{BLU}IT ALSO USES VERY LITTLE MEMORY.{2SPC}{YEL}TRY YOUR OWN MESSAGE!{2SP
C}{BLU}"
5 A$=A$+B$+C$+D$
10 PRINT"{CLS}{19CD}"
20 FORN=1TOLEN(A$)
30 PRINTTAB(I)MID$(A$,N,1)
40 FORT=1TO175 NEXT
50 NEXTN
60 FORK=1TO500 NEXT PRINT"{CLS}" LIST10-50 CLR END

READY.
```

Horizontal scroll

```
10 PRINT"{CLS}{CD}{8CR}{RED}{REV}SCROLL{3CD}"
20 PRINT"{BLK}{3CR}BY NEIL PHILLIPS{6CD}"
30 BL$="{19SPC}"
40 A$="{BLU}THIS IS AN EXAMPLE OF A VERY SIMPLE WAY TO ADD VARIETY TO YOUR PROGR
AMS WITH "
50 B$="HORIZONTAL SCROLLING.{2SPC}{ORN}IT COULD EASILY BE INCORPORATED INTO A PR
OGRAM AS A "
60 C$="SUBROUTINE. {PUR}USING VERY LITTLE MEMORY.{2SPC}{YEL}TRY YOUR OWN MESSAGE
!"
70 A$=BL$+A$+B$+C$+BL$
80 FOR I=1TOLEN(A$)
90 PRINTTAB(2)MID$(A$,I,18)
100 PRINT"{2CU}"
110 FORK=1TO150 NEXT
120 NEXT
125 PRINT"{3CU}{BLU}"
130 LIST70-120 CLR END

READY.
```

Screen scroll

```
20 V=36878 N1=36874 N2=36875 S=36879 M=36865
30 POKES,25 POKEM,134 POKEV,15 POKEN1,198 POKEN2,142
40 PRINT"{CLS}'SPC(1)"{BLU}A SIMPLE VIC SCROLL"
50 PRINTSPC(8)"{BLK}FROM"
60 PRINTSPC(4)"{CD}{RED}NEIL PHILLIPS{BLU}"
70 FORT=1TO500 NEXT FORA=128TO65STEP-1 POKEM,A FORB=1TO45 NEXTB,A
75 POKEV,0 FOR1=1TO1500 NEXT POKEV,15
80 FORA=65TO80STEP-1 POKEM,A FORB=1TO45 NEXTB,A FORT=1TO300 NEXT
90 PRINT"{CLS}" POKEM,25
100 POKES,27 POKEN1,0 POKEN2,0 POKEV,0 CLR END

READY.
```

Review

Turning tortoises into hares

The 1541 Express cartridge reviewed

by Kevin Bergin

The Commodore 1541 disk drive has an unhealthy reputation for sluggishness, to the extent that cassettes with a 'Turbo' facility load just as quickly as disks. And there's nothing you can do about it.

Well, not quite. Now you can buy the 1541 Express cartridge from Ram Electronics. It connects computer and disk drive via the 64's cartridge port, and claims to let you load and save files from the 1541 at more than double the normal speed. That sounds pretty impressive but is it impressive enough to warrant its hefty £49.95 price-tag?

What you get

For your money you are supplied with a cartridge that plugs into the the 64's cartridge port. And there's a short eight-page manual to help you install and use your new device.

But before you can use the 1541 Express you must face the somewhat daunting prospect of connecting two wires which are attached to the cartridge, to two chips inside the 64. This means that you must take the lid off the 64 and this could affect the warranty, so be warned

The two wires that dangle from the cartridge are labelled **6510** and **U14**. These are the names of the chips that the wires must be connected to. Both wires have a small grip on the end of them so that the connection is secure, but easily removeable.

The wire marked 6510 is connected to pin 28 of the processor chip and the wire marked U14 is connected to pin 15 of the chip marked U14 (in fact the chip is not marked U14 at all, it's on the board beside the chip). It's far better to run the wires through the back of the 64 so that the casing can be closed properly and securely

Don't worry about connecting the wires to the wrong pins, you won't damage anything. The cartridge simply won't work and you'll just have to check the connections again. Having connected the wires to the correct pins the 64 should be put back together again and the cartridge inserted into the cartridge slot.

When you power up the 64 with the 1541 Express properly installed, you'll see three lines to the power up message instead of two. The second line should give the product name and copyright message. The amount of RAM though, is not affected: there are still some 38911 bytes available

Operation

Using the cartridge is very simple and smooth. When the 64 is powered up with the 1541 Express installed, the two function keys F1 and F3 are set to toggle between fast and slow mode. In other words, the normal disk access time may be used with the cartridge in place by pressing the 'CTRL' key and the 'F3' key together; the screen will flash once quickly to show you the command has been accepted

To get back to fast mode simply press 'CTRL' and 'F1' together. Again the screen will flash once, although this operation takes a little longer. Holding down the 'SHIFT' key and pressing 'RUN/STOP' will load and run the first program on disk. The cartridge changes the default device to disk. So files can simply be loaded in the form:

LOAD"<FILENAME>
<return>

There is no need to enter the device number or close the quotes; the usual abbreviations are accepted

Ram Electronics claim up to three or four times the usual access time. But the actual speed is more like double on average. Above are some timings for loading and saving both program and word processing files with and without the 1541 Express cartridge

	Normal	1541 Express
Loading 33K program	84 secs	39 secs
Saving 33K program	91 secs	44 secs
Loading 34K w/p file	112 secs	46 secs
Saving 34K w/p file	92 secs	44 secs

These tests are all approximations but they do show that the cartridge doesn't actually achieve three times normal speed. They do however show a large speed improvement particularly with normal programs, as opposed to files loaded and saved from a word processor

The 1541 Express will work with Easy Script, Paperclip and (I am informed) most other soft loaded word processors. From the tests I found the disk access time was generally reduced by half.

Using other software such as utilities and Basic extensions does not have any adverse effect. Even if a program does conflict it is often possible to load and run it by switching to normal mode

Buffer space and Sprites

The 1541 normally objects to sprites being on the screen whilst the disk is accessed, but not so with the cartridge installed. You can display sprites and still have access to disk

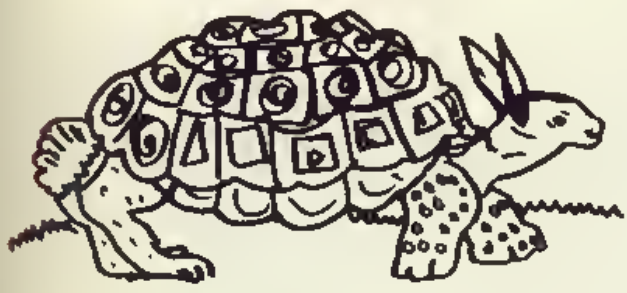
The cartridge reverses one of the drive buffers reducing the number of files OPEN at any one time from three sequential files, or one sequential and one relative file to two sequential files or one relative file, in fast mode

You can also use a modem with the cartridge. This allows even swifter downloading of programs. However if you wish to have more than one device connected to the 64's serial port whilst using the 1541 Express, you will have problems as it will only access one. So anyone with a 1541 and a printer connected to the serial bus or two 1541's will not be able to use the cartridge with more than one of these devices.

Ram says it is going to market a cheap cable that will allow you to have two drives, or a printer and one drive connected whilst using the cartridge in fast mode. The cable will also have some other features. No details as yet, we shall have to wait and see

At present, depending on what printer you are using and how it is connected, the cartridge may work in slow mode with your printer. Two single drives may be connected with the cartridge installed, but only accessed in slow mode

The code for the cartridge is invisible, the normal cartridge space is $8000 to $9FFF hex but upon examination there was nothing there. The space that normally occupies the ASCII code for the power up message has some strange code and the area from $DE00 hex onwards will not disassemble. So for those who are curious, this should provide some challenges



Documentation

This is the area that's sadly lacking as is so often the case. The manual is a mere eight pages long and the presentation is not nearly as professional as the product itself. This slim tome covers the installation of the cartridge, the operating instructions, limitations of the cartridge and working with other peripherals. But it gives only a few notes for programmers.

There could be a great deal more explanation of the cartridge in general and the problems that might occur in using it with other peripherals. It's pretty obvious that you're going to have problems using cartridge-based software say, a word processing package, to access files on disk.

A few demonstration programs with documentation would not have gone astray, together with more information for programmers wishing to make extensive use of the cartridge and its facilities.

Conclusion

It's a shame about the manual, it could have contained a lot more information and the presentation could have been better. The other drawback is of course the lack of a cartridge port when using the 1541 Express; any cartridges you normally use, or wish to use, cannot be connected. And it seems that the only way around this is to buy an expansion board. Even then I am not sure if they would work together; perhaps Ram Electronics will clarify this in the near future.

But the product does do what it claims. And it will save you a lot of time if you use your 64 and 1541 daily. The general standard of the product is very high and I have no hesitation in recommending it. In fact, since reviewing the 1541 Express I have purchased one myself. It is one of those products that you just have to have – that's if you can afford it. ◉

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Description:	***Fast disk access utility for 1541 disk drive***
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Summary:	***Rather expensive but very effective***
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Adding up the Plus/4

by Karl Dallas

It's now 'official' that the Commodore Plus/4 will actually make an appearance on your local High Street, having made its debut along with the less illustrious Commodore 16 at the recent Commodore Show. But the confusion and speculation about what role it will take on, and what gap it will fill in a market that's already busting at the seams with new and newfangled hardware, rumbles on unabated. And then there's the inevitable competition from the Commodore 64 itself.

Karl Dallas has managed to acquire a pre-launch version of the Plus/4 (albeit without the ROM-based software) and has managed to fuel his own speculations with some hands-on experience, notably of its extended Basic and graphics facilities.

About 18 months ago I was feeling pretty pleased with myself, because I had secured an exclusive preview of Commodore's brilliant new CBM 700 128K business machine. Today stocks of the 700 are being sold off at bargain prices. Software companies who invested time and money in developing programs to take advantage of the machine's special features are trying hard to recoup their costs.

The point is that when you are dealing with a company whose marketing of new products seems as capricious as Commodore's, the merits of any given machine may have little to do with whether it goes or stays. And when a new machine has as many question marks against its future as the new Plus/4, that may be doubly so.

In the starting blocks

The Plus/4 comes on to the market confronted by some hefty opposition, not only from the likes of the superbly conceived Amstrad and the first of the new common-standard MSX machines from Japan, but also from within Commodore itself. For in many ways, the Plus/4 seems to offer a less versatile and less compatible alternative to the already tried and tested Commodore 64, with more sophisticated Basic programming commands, but without the 64's superb (if complicated to implement) sprites facility.

Indeed, when I first saw the 264 machine upon which it is based at

the Commodore Plus/4 previewed

the Hanover Trade Fair in the spring and later the actual Plus/4 at the Pet Show in London, I must confess I was sceptical about whether Commodore were really serious. I still feel rather that way, but I am assured that as soon as Commodore's corporate move to Corby has been successfully completed (and it's inevitably taken longer than planned), Plus/4s will start rolling off the production lines in time for Christmas. And software companies are working hard to have adequate applications ready at the same time.

The machine is intended to be quite a powerful package, with 32K of ROM, 64K RAM and advanced Basic including graphics and sound commands. It has programmable function keys, and an integrated ROM based software package, covering word processing, spreadsheet, database and business graphics. It is planned to sell at less than £250.

But it won't run any other Commodore software and the peripheral sockets are not the same as for other Commodore machines (apart, that is, for the still-to-be-seen and even more iffy Commodore 16). However, I managed to run an ordinary 1541 disk drive from the serial port, and I actually found it easier, using an ordinary 5-pin DIN plug, to attach a monitor. With my 64, I had to make up a special lead.

So, possibly, the peripheral incompatibility is more a matter of having different plugs than any really distinct differences, though I see we are promised a "fast disk drive", the SFS 481, in addition to the Plus/4's version of the 1541, the 1542.

A clean machine

The computer I had access to was something of a 'clean machine', without the integrated software, so a verdict on that will have to wait. It was also without any kind of manual, though I had access to some technical data that probably won't be in the manual anyway. I must say that after prolonged usage I was much less sceptical about its merits as a piece of hardware.

Shapewise, it represents a real break with Commodore's past, being more of a rectangle than the fairly skinny Vic and 64 shape (which has also been retained for the 16), about half an inch wider and nearly 1½in deeper. But it's not so high, a mere 2½in compared with the older machine's 3in at the back.

And it has two more keys: ESC above CONTROL on the left and RESTORE has become a duplicate CONTROL. There are also four arrow shaped cursor controls. That means you require no shift for up and left cursor movement.

Two additional labels on the '<' and '>' keys at the bottom of the keyboard indicate a new function available. FLASH ON and FLASH OFF. FLASH ON is accessed in the same way as RVS ON, by putting it within a quoted print statement, but to switch off this facility you have to reposition the cursor in the same place. As you reach the bottom of the screen, and the text scrolls up, the flashing character scrolls up as well, until it vanishes off the top of the screen. That makes things somewhat difficult.

Colours (including those accessed with the CBM key) and lo-res graphics symbols are printed on the front of the keys.

There are five screen modes, accessed by the GRAPHIC **n** command, where **n** is a number from 0 to 4. 0 is text (25 lines of 40 characters), 1 is hi-res graphics and 3 is multicolour graphics. Five lines of text are available on either of the graphics screens by invoking GRAPHIC 2 (hi-res split screen) or GRAPHIC 4 (multi-colour split screen).

Function keys

On power-up, the four function keys along the top left-hand of the keyboard are dedicated, respectively (unshifted/shifted), to print GRAPHIC/SNCLR (cr), DLOAD"/DSAVE", DIRECTORY/RUN (cr) and HELP/LIST (cr). SNCLR clears the screen (like CLEAR/HOME) and those where I've indicated "(cr)" include a carriage return and hence immediate operation. It is impossible, therefore, to add any parameters to RUN or LIST, unless one redefines the keys, which is quite easy to do with the KEY command.

The parameters for doing this are **KEY, n, textstring** where **n** is 1-8 and **textstring** is the new text to be printed and/or implemented when the function key is pressed. Slightly confusingly, F2 is not a shifted F1 but the second key along, so that the keys are actually numbered F1/F4, F2/F5, F3/F6 and HELP/F7.

HELP is a toolkit command for identifying errors in program lines during debugging. Its key can also be redefined, but despite its position it is F8.

The DLOAD/DSAVE options, of course, indicate the first instance where the Plus/4 is superior to the 64, in that it includes all the simple Basic 4 disk commands familiar to Commodore business system users (though the Basic used is described as Basic 3.5). These include DIRECTORY, DLOAD, DSAVE, HEADER (to format a disk), SCRATCH, COLLECT (to validate a disk and remove any unclosed files, etc), COPY, RENAME and BACKUP (available only with dual disks, to copy an entire disk).

No longer is it necessary to add the device number (still 8) in disk commands. DSAVE"**filename**" is equal to SAVE "**filename**",8. DIRECTORY is the same as the "wedge" command available with the DOS support utility on the 64. Unlike LOAD "$',8 followed by LIST, it doesn't overwrite any program in memory. DIRECTORY can be abbreviated **DIR**, making it a fast way of checking disk contents, program names, etc. The default parameter with all these disk commands is drive 0.

Inside and out

At the back and sides there are nine I/O sockets: 7-pin DIN socket (taking a 4-pin plug) for power from the familiar chunky Commodore transformer, serial 6-pin DIN, cassette 7-pin small cylindrical socket, user port, memory expansion (cartridge port), two 7-pin cylindrical joystick sockets (similar but not identical to the cassette socket), and video 6-pin DIN at the

back, and RF (TV aerial) out on the left. By the RF socket is a low high switch, and on the right of the computer is a warm reset button and the power on off.

The keyboard is quite pleasant to use. It's not quite as solid as the 64, certainly not a patch on the very firm, very quiet keyboard on the new business machines, but much less tinny, for instance, than the keyboard on the £3000-plus Hyperion IBM-compatible on which Commodore is basing its promised PC lookalike machine.

Inside, the machine is very well laid-out, with the 48-pin TED chip which provides all the power for the Plus/4's various activities very much in evidence, surrounded by a fence of metal shielding. (Incidentally, no one can explain why it's called TED. We know that the SID chip's name in the 64 is an acronym for Sound Interface Device, but we have it on no less authority than Gail Wellington that if TED ever meant anything its meaning has now been forgotten.)

TED can access up to 64K of memory for display information and it (I almost said he) also controls video output, system timing, dynamic RAM control, ROM chip selection, and keyboard control. TED selects the 16 colours and eight luminance levels per colour, control sound generation, controls the two speed clock and flashes the cursor (or any other character) twice a second (2 Hz).

More powerful Basic

On power-up, the screen displays the usual opening array, with the difference that the Basic indicated is 3.5, of course, and there are over 60 Kbytes of memory available.

In all, Basic 3.5 has over 50 more commands and functions than the 64, including 'toolkit' commands used in writing and debugging programs. These include AUTO, DELETE, ERR$, HELP, RENUMBER, RESUME, TRAP, TRON and TROFF. Structured programming commands are DO, ELSE, EXIT, LOOP, UNTIL and WHILE.

Then there's graphics commands. BOX, CHAR, CIRCLE, COLOR, DRAW, GRAPHIC, GSHAPE, LOCATE, PAINT, SCALE, SCNCLR, and SSHAPE. Sound commands include TONE and VOL.

There are now seven reserved variables in addition to the familiar TI and TI$ time variables (the use of which is unchanged), there are also the disk status variables familiar to users of Basic 4. DS (status number), DS$ (status message), and ST (status of i/o operation), as well as ER and EL, which gives the error number and line number of a programming error.

Machine-code monitor

The direct command, MONITOR, invokes Tedmon, the resident monitor (which can also be accessed via SYS 4, like the Pets) which has available a set of single line mnemonic commands (see table above).

The kernal routines seem mainly unchanged, although according to my data sheet IOINIT has an address of $FF81 (not $FF84) and VECTOR is $FF84 (not $FF8D).

- A – assemble a line of 6502 code
- C – compare two sections of memory and report differences
- D – disassemble a line of 6502 code
- F – fill memory with the specified byte
- G – goto a specified address and start execution
- H – hunt through memory for all occurrences of certain bytes
- L – load a file from tape or disk
- M – memory display of hexadecimal values in specified locations
- R – 6502 registers display
- S – save to tape or disk
- T – transfer code from one section of memory to another
- X – exit to Basic

Plus/4 graphics compared

Undoubtedly, most hackers will warm to the graphics commands, although it's a pity we've lost the sprites.

As on the 64, the bit-mapped hi-res screen is 319 wide by 199 deep. And the bit-mapped multicolour screen is 159 by 199 (the 64 reference guide says its screens are 320 and 160 wide respectively, but the effect is the same). The GRAPHIC mode command is obviously easier to invoke than the 64's POKEs and PEEKs, as is the split screen, though text is limited to the bottom five lines.

However, text can be placed anywhere on a graphic screen by using the CHAR statement, so that

CHAR 1,0,0, "THIS IS THE TOP LINE"

will print along the top of the screen, 1 being the colour selected, the first 0 being the first column on the screen (numbered 0-39, not 1-40), the second 0 being the first row (numbered 0-24, not 1-25). The string can be printed in reverse if flagged with a ',1' after, and turned off with ',0'.

It's interesting to compare the Plus/4's DRAW command with the same command in MSX and on the new Amstrad. The Amstrad uses DRAW x,y(,ink colour), starting from the present cursor position, which has the benefit of simplicity, but is limited to straight lines, and the cursor has to be moved to the start position (using LOCATE).

MSX uses a quasi-LOGO syntax, again starting from the current cursor, but with U D-R-L prefixes for up, down, right and left, plus E (up and right), F (down and right), G (down and left) and H (up and left). A shape can be defined as a variable, so that a square can be defined as **A$** in **A$ = "U80R80D80L80"** and **DRAW "XA$;"** which executes the square.

The Plus/4 syntax is something of a compromise between the two, linking x,y co-ordinates, so a square could be drawn:

DRAW,10,10 TO 10,60 TO 60,60 TO 60,10 TO 10,10

The colour of the line can be defined or left blank, in which case the default is the last colour used.

There is also, however, the Plus/4 BOX command specifically to draw rectangles, by specifying the positions of the four corners, with a "fill" parameter to paint the box with colour.

The CIRCLE command will draw ellipses, octagons and even diamonds and triangles as well as proper circles, depending on the parameters specified. The non-circular shapes are chosen by specifying 120 degree angles between segments of a triangle, 90 degrees for a diamond, and 45 degrees for an octagon. The default setting is two degrees.

Colours are specified from Basic by allocating one of 16 to either background, foreground (ie characters), multicolour 1 or multicolour 2, or border, with an optional luminance parameter 0-7. The default luminance is 7, the brightest.

In all drawing commands, the colour parameter has to be chosen from one of the five areas already defined.

PAINT will fill the shape as created, either with the same colour as the shape outline or with a definable foreground colour.

The shapes so created can be SAVEd or recalled by use of the SSHAPE and GSHAPE commands.

It is clear, though, that the graphics capabilities are designed for more serious applications than games, and the sound facilities are likely to be more useful for voice prompts than for space invader explosions. For instance, one software house already has a word processor with spoken instructions supplementing the screen prompts almost ready for commercial distribution.

Conclusions

Despite its appearance, the Plus/4 is not the Mickey Mouse machine it may seem, though whether its target market of small-to-medium businesses will believe that, remains to be seen. The problem is that this market won't be very concerned about its monitor of powerful Basic, and to the non technical user it has very few advantages over the already established 64.

Its graphics capabilities, and ease of programming from Basic, are quite powerful, but the lack of any kind of sprite manipulation must put it in a poor second to comparable machines that have this facility.

A lot will depend upon the qualities of the ROM-based software, and how much appeal voice-based business packages are likely to have.

My scepticism about its future is less pronounced as a result of actually using it. But until I've had my hands on a production machine and looked at the ROM-based software, it's not entirely dispelled.

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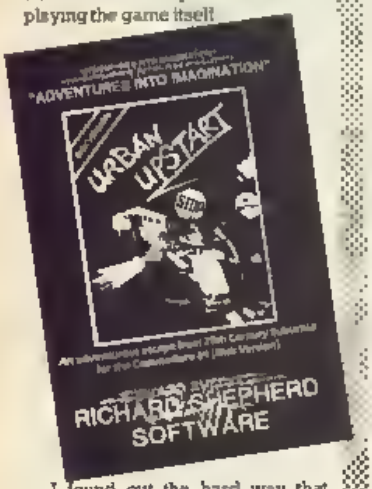
Adventure

Into the Valley...

Opening up a new adventure series

by John Ransley

You're probably familiar with the scenario of the Richard Shepherd graphic adventure **Urban Upstart**, which head-bangs your usual quaint fantasy foes and dripping dungeons in favour of a curiously chilling contemporary encounter that makes *A Clockwork Orange* seem about as violent as a round of arm-wrestling with Quentin Crisp. But it's a bit much when the aggro extends to the practicalities of playing the game itself.



I found out the hard way that **Urban Upstart** takes a particularly uncompromising approach to the task of letting the player save a game to disk at any point. Instead of just cutting a fresh track on your own disk in the form of a sequential file, as seems to be the accepted convention, **Urban Upstart's** Save option first totally reformats the disk you use. In other words, it wipes any and every single program already on the receiving disk to capture (which left me wearing a fixed grin of resigned expensence, like one of those Olympic synchronised swimmers) just a single-track sequential file holding the few variables concerned.

There is no warning of this novel consequence of a Save in either the program notes or screen prompts, so I hope you read this before you lose, as I did, a great wad of keyboarding by taking something for granted. I can't fathom why **Urban Upstart** totally reformats instead of simply opening and closing a file in the usual way, but if one program does so, there's a good chance that others do, too. The lesson learnt is that it must be a good idea to test Save any new adventure in your collection, using a blank or expendable formatted disk to do so.

Across the pond

Signs are that after a pretty insipid start Thorn EMI mean to mix with the action in the UK software charts and it's thanks to them that some of the top-rated titles from American software house Hes-Ware is now becoming available this side of the pond. First offerings include a splendidly elaborate four-level arcade adventure for the Vic-20, **The Pharaoh's Curse**. But it seems that the anger of the ancients has extended to the packaging, because the tape version at least boldly proclaims that no RAM expansion is needed. It is – a wacking great 16K of it. Makes you think twice about impulse buys, doesn't it?

Just what is adventure, anyhow? Already there seem to be four distinct categories. There is the pure text adventure, such as the original **Colossus Caves**, the graphic adventure, such as **The Hobbit**, the animated adventure **Valhalla** and the arcade adventure, like **Manic Miner** or **Alice's Adventures in Videoland**. Can anyone think of others?

Page the Oracle

You could call **The Oracle's Cave** from Dorcas Software an endless animated adventure, because not only does it offer four different quests but the cave layout is drawn afresh every time. This title received hot reviews when originally released for the Spectrum, and the version just out for the 64 shows why it's splendid.

You're faced with the fairly conventional task of exploring a cave complex where you may collect useful objects and treasures, and do battle with a variety of fierce monsters with degrees of success depending on your weapons, current combat strength, and ability to recover from wounds.

The many options available through single key presses (what a timesaver) including moving in any direction, slipping through secret passages, resting (it eats up time, though), exploring your immediate vicinity, and pleading for help.

A particularly nice feature of the game is that you have just five days to complete each attempt and a screen prompt shows the morning, afternoon and evening of each day slipping inexorably by as you delve deeper into the complex. Also constantly displayed on the lower part of the screen is lots of other helpful information, such as your combat strength and that of your current foe, the weapons and items you carry, and a mini-map showing the tunnels you've explored, which is redrawn every move.

Meanwhile, the top half of the screen constantly displays a hi res view of your current location, including a sprite representation (looks a bit like Morph, actually) of your goodself, which walks along the scrolling caveways, wriggles up and down ropes and ladders, and attacks monsters at your com-

What wins extra praise for **The Oracle's Cave** is that the challenges you meet, their solutions and your continuing progress all have a decent logic to them – you don't get struck down at random at the whim of some so-called interactive element. Thus the intelligent gamer can and does eventually win through. The icing on the cake is that the 64 tape version, price £7.95, uses the ultra-fast Pavloda system, which gives a reliable Load within a couple of minutes.

Even if, as a purist textual gamer, you buy no other animated adventure, do treat yourself to the entertaining quality of **The Oracle's Cave**.

Colour tip

An irritating shortcoming of many text adventures (and one found in the excellent *Infocom* titles) is that a Henry Ford-type philosophy is adopted when it comes to the matter of text/background colour options – or, rather, the lack of them.

Strange to relate there are those of us who find the 64's standard combo of blue on blue boring and/or a strain after a little time at the screen. One prime especially the elderly and others with poor eyesight whose enjoyment of a text adventure can be spoiled by the absence of the few lines of programming which can quite easily banish the fault.

If you're writing an adventure yourself, here's a little sub-routine that will make it easy for you to avoid the thoughtlessness of some professional programmers and give players of your game a choice of 256 text/background colour combinations (which can be just as valuable to those using a mono-chrome TV or monitor).

And it's sometimes possible to break into commercial programs (you wouldn't, would you?), you might even be able to tag this

The list of desirable British and American adventure games for the Commodore 64 is growing week by week. That reflects not only the growing interest in adventuring but also the 64's eminent suitability both in graphics and 'elephantine' memory for this brain-straining pastime.

In response to sackfuls of requests from avid gamers, the equally avid John Ransley has started a regular Adventure column to let you take time off from wondering colossal caves and dodging axe-wielding hobgoblins. But we'll still be relying on you, the reader, to tell us what you want. And in future columns, we'll try to give an airing to readers' comments, ideas and programming tips. But if you're "stuck in the mauve swamp" or you don't know what to do with the Gimblegook's wand, you'll find no real solace here. Now read on...

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u?), you
tag this

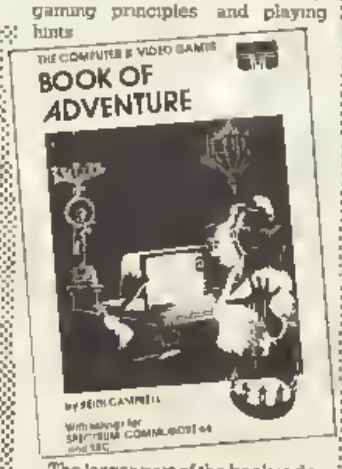
routine on to any title in your collection in which you'd like to incorporate it. Here's the listing:

```
100 REM INTRODUCE FOLLOWING LINES EARLY IN THE PROGRAM
110 PRINT "PALSS SPACE BAR TO ALTER TEXT/SCREEN COLOURS"
120 GET K$: IF K$="" THEN 120
130 IF K$<>CHR$(32) THEN 150
140 GOTO 500
150 REM PROGRAM CONTINUES
500 X=0
510 PRINT (TAB 2) "PRESS 5 KEY TO ALTER SCREEN COLOUR"
520 PRINT (TAB 3) "PRESS T KEY TO ALTER TEXT COLOUR"
530 PRINT (TAB 8) "PRESS SPACE TO CONTINUE"
540 GET K$: IF K$="" THEN 540
550 IF K$=CHR$(83) THEN X=X+1
560 IF X>15 THEN X=0: GOTO 540
570 POKE 53280,X: POKE 53281,X
580 IF D=159 THEN RESTORE
590 IF K$=CHR$(84) THEN READ D: PRINT CHR$(147) CHR$(D): GOTO 510
600 IF K$=CHR$(32) THEN RETURN
610 GOTO 540
620 DATA 005, 028, 030, 031, 129, 144, 148, 150
630 DATA 151, 152, 153, 154, 155, 156, 158, 159
```

Games

Read all about it

Maybe it is a little too fundamental for the experienced orc-strangler, but **The Adventurer's Notebook** by Mike Gerrard (Duckworth, £3.95) is written with such infectious enthusiasm for the subject that it makes a worthwhile addition to the micro bookshelf, whatever one's level of competence. It actually runs to fewer than forty pages of introductory text. But these present a highly readable run-down of the genre's not so ancient history, gaming principles and playing hints.



The larger part of the book is devoted to two sets of adventure worksheets, every one of them comprising pages for recording your progress through the adventure, objects found, action taken, recognised verbs and nouns, and so on. And there's a 105-location map for charting your progress.

You could of course use more than one set for larger adventures involving a greater number of known locations. You might even (though don't tell anyone I said so) photocopy extra pages yourself – the lie-flat spiral binding makes this easy to do. It's certainly an improvement on trying to decipher my previous night's squiggles and squares committed to the back of rates demands and book club invoices.

A more substantial volume altogether is Keith Campbell's **Book of Adventures** (Melbourne House, £5.95). Street credibility is enhanced with a foreward by Scott Adams, who comes dangerously close to writing something existentionalist about puddings – but with Adams, what can you expect?

The usual introductory chapters on the genesis of computer adventures (Crowther and Woods now being as familiar a twosome as Fortnum and Mason, Marks and Spencer or Burgess and Maclean) is followed by a gentle scroll through the various stages of creating an adventure, using sensibly an example program with fewer than a dozen locations to keep the baptism simple. But it still manages to incorporate all the main programming ground rules.

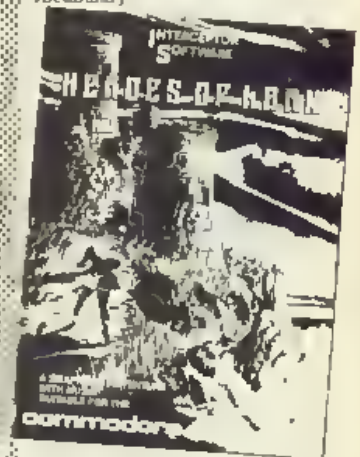
You'll learn how to move around the map, site, take and leave objects, introduce special commands and traps, check your inventory, and structure a one-solution finale. All the examples are presented in Basic that is non machine specific, so Commodore users still have no difficulty in adopting them. The main demonstration adventure, however, is reproduced as an easily-readable customised Listing – one of them for the 64 or Vic.

New releases

One of the more underrated releases of recent months is **Heroes of Karn** by Ian Gray. It's a graphic beam stretcher that sets the player against the dark forces which have abducted the kingdom's four greatest citizens – Beren the Mighty (last king of Karn), Istar the Wise (lore-master and magician), Haldir the Elf-lord (greatest of minstrels), and Khadim the Dwarf (carver of stone).

Still a relative innocent in this quest, I have no idea yet just how many locations, characters and challenges **Heroes of Karn** will summon up – enough to say that Antoq the Gipsy King, the swamp lizard, The Plain of Stones, a strangely-deserted monastery and that ubiquitous grinning skull already have me going round in expletive peppered circles.

The gamer is presented with a pretty hi-res picture at every new location he visits, but as a time-saver this is suppressed on subsequent visits – although you can call up the graphic again if you want, say, to check for a visual clue. You can enter 'proper' sentences such as "Give underbox to swamp lizard" (he ate it – which shows you what kind of home life Ian Grey must have), or "Say to Istar, 'Enter the burrow' " But cheats like myself must manage without a dictionary of the adventure's permitted vocabulary.



Heroes of Karn is from Interceptor and comes in a sturdy vinyl wallet with clear and adequate playing instructions at £9.96 on disk, £6.95 on tape.

Up and coming and in the shops in time for Yuletide gaming are a sequel from Interceptor to **Heroes of Karn** and a 64 version of Artic's controversial **Ship of Doom**, then there's **Castle Blackstar** and **Pyramid of the Sun**, both text adventures from CDS. A seasonal tangle with the ice age, **Midwinter** comes from Channel 8 and **Stranded**, a promising graphic adventure featuring a marooned astronaut, from English Software.

And there's more **Storm Warrior**, an arcade quest is being released on K Tel's new Front Runner label. And a new state of the art animated adventure from Melbourne House is making its debut on the 64.

And who'll be the first to rush out an arcade adventure Ghostbusters look-alike, now that the movie looks like outgrossing even Steven Spielberg?

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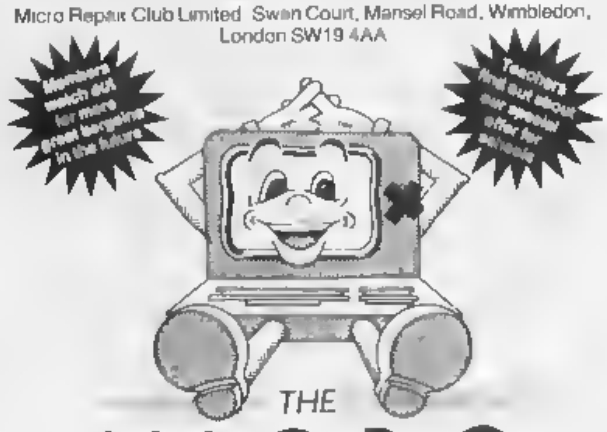

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Music

Making sweet music

64 synthesiser packages reviewed

by Fred Reid

The Commodore 64 has always been a particularly attractive machine for games programmers, not least because it has such sophisticated and spectacular sound and music capabilities. Those tuneful melodies and weird sound effects that accompany your favourite games are all produced by the 64's diminutive yet powerful SID chip.

But actually using SID unaided can be inordinately difficult, especially since the 64's Basic offers no sound commands. So the easiest way to make your 64 play Beethoven (or make him roll over) is to buy one of the many synthesiser packages now available. Recovered from last month's introduction to synthesisers, Fred Reid has been looking at some synth offerings currently available.

Synthy-64

Synthy-64 is a program best described as a music and sound synthesiser/composer. It allows you to enter musical notes and symbols in a similar way to writing a Basic program – numbered lines, each executed in sequence, each containing a number of instructions.

Various other analogies with Basic are evident. For example you can set up sub-routines, loops, nested loops and GOTOs, and you can insert new lines in-between old ones.

But there are several noticable differences – most importantly the 'look ahead' function. This feature allows the composer to scan through the text, looking for any command that it can execute immediately. This means that you can play up to three notes simultaneously, even if they are not positioned together in the text. Don't worry, the new syntax is not difficult to get to grips with, and the manual explains all.

The envelopes and wave shapes of all three voices can be easily altered, and a whole bank of preset instruments can be set up. The filter and volume controls still effect all three voices, but these can be modified as often as you like during a composition by calling a subroutine. Other functions allow you to select the various filter modes, such as resonance, synchronisation, ring modulation, pitch modulation for filter and/or voice. This makes quite complex sounds (and noises) simple to produce.

Composing tunes

For the would-be composer, a complete set of instructions is available. These allow music to be written for up to three voices, using all the traditional methods. Any of the 24 possible key signatures can be selected at any point in the composition, as can the 240 possible tempo settings. To play a note, you must enter the note value ('A' to 'G'), the octave (1 to 8) and length (1/1 to 1/64).

In addition, lengths can be dotted, notes can be tied, and so on. Rests for each voice can be set in a similar way, and the 'wait' function can provide pauses lasting for seconds. The only things missing, from a composer's point of view, are bar-lines and other accents.

Lastly, a round-up of some of the other facilities on offer. No music program would be complete without some means of storing and retrieving your pieces, and this one has **Load** and **Save** commands for tape and disk. A 'tracer' function lets you watch the changes in pitch, and waveform, as it plays. And the structure of the music-program storage allows for easy editing. The program even lets you include **Print** commands in your music, and lets you list the music program to a printer – very useful.

Conclusions

Although the manual is generally well written, spelling mistakes abound, the print quality is pretty poor too. As the manual is about 40 A5 pages long and tightly packed (photo-reduced daisywheel printing), an index or quick-reference section would have been nice, not to say essential.

One particularly annoying feature is the three sample

pieces. None of them even came close to the mental image I conjured up from their titles 'Battle Hymn of the Republic', 'Polka' and 'Moonlight Sonata' The program is so constructed, that you have to load the three aforementioned atrocities and play one of them before you can get down to your own composition. This is not only unnecessary, but almost doubles loading time

To sum up, this program is limited both by it's non-graphic representation of the music, and by the limitations of the 64 itself, which has only poor dynamic control, and produces background noise from the video circuits. But all that is compensated by the flexibility that Synthy-64 allows. Still, programming a long composition can be a long and tedious affair, but a dedicated effort can produce excellent results.

The Commodore Music Composer

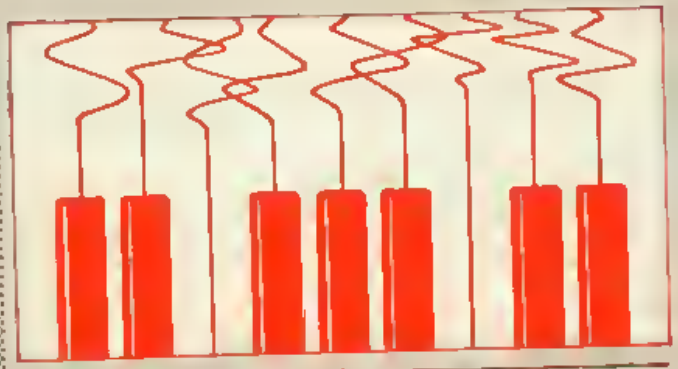
"Are you tone deaf? Do people cringe when you sing or play an instrument? You have just purchased your salvation!" That's the blurb that confronts you on the first page of Commodore's 'Music Composer' manual, as if in defiance of all we know to be true. Can the program live up to this bold statement?

Firstly, Music Composer is cartridge-based, so it loads instantly without you needing to brew a cuppa in the meantime. Powering up invokes a title page with an invitation to press any key. This offer provides you with the main menu; and selecting option 1 from this menu gets you the sample song.

At this point, we notice the main feature of this package; the music scrolls across the screen from right to left, the notes appearing as you hear them. Although the use of smooth-scroll graphics is pretty clever, the feature is almost totally useless because musicians (aspiring or otherwise) generally read about two bars ahead of the note being played or listened to

Each note appears in a different colour according to which voice is playing it, although this feature can be cancelled if not required, and then all the notes appear in black.

A number of preset instruments are provided, and



can be selected from a secondary menu. These instruments include such audio delights as harpsichord and calliope (a kind of steam organ). Later we will discover how to create our own sounds.

Option two from the main menu turns the 64's keyboard into a piano type affair in the normal way and as you play, the notes once again scroll across the screen.

Programming

Programming note sequences, as opposed to just playing, is achieved in a similar, yet less complicated way, to **Synthy 64**. You start with a line number, and follow it with a string of notes, length values, octaves, etc At any point, you can listen to what you have just written, or in the unlikely event of your program overflowing the screen, list it. In this way, you can edit in a similar fashion to Basic.

No composing system would be complete without a **load/save** option, and in this case, the medium is cassette, the option once again being selected from the main menu.

Under the heading of 'Advanced Special Effects', the manual proceeds to describe how to make up your own sounds. Unfortunately, they forgot to allow you to store your sounds for future use!

The manual is slightly larger than 'pocket' sized, and outlines the basic operation of the composer, and briefly explains some of the terminology not common to everyday use. The manual finishes up with a complete and useful guide to what keys do what

Conclusion

To sum up, a simple little package, with one or two gimmicks but little educational value, and unlikely to remain a treasured part of your collection for long.

Ultisynth 64

Quicksilva, Ultisynth 64's publishers, describes their package as a music processor perhaps 'sound processor' would better describe Ultisynth's nature.

The package is cassette-based and consequently takes about seven and a half minutes to load. It comes in a large plastic box with a skimpy booklet/manual – more on this later

On loading, you're presented with a menu for selecting such essential options as **record**, **playback**, **load**, and **save**, amongst others. Selecting **record** produces the main display screen containing information relating to the sounds and notes.

Across the top of the screen is a table containing the ADSR (attack, decay, sustain, release) values and the waveform(s) selected for each voice. Next to this table are four dots arranged in a distorted diamond pattern; the significance of these I have yet to discover.

The lower half of the screen is split down the centre into two halves, containing horizontal bar-charts indicating the frequency of each voice, the tempo of each voice, filter frequency, resonance and others. Control over these functions is obtained by selecting any of the 164 key combinations. That lot makes constant reference to the manual pretty essential.

Playing and composing

In **record** mode, most of the unshifted keys play notes. And as you play each one, it's value is displayed at the centre of the screen while previous values are scrolled left. These values are stored in sequence for later playback. The position of the next note in the sequence can be moved backwards or forwards to enable editing of the all too frequent duff notes you accidentally produce

Pressing the space bar gets you back to the main menu. Selecting the playback option takes you back to the previous display, with the only difference being that the notes are played back automatically at a tempo of your choosing (If you can find the correct keys!)

In **compose** mode, you enter notes via a vertical bar chart that scrolls to the left as you set each note. This I found particularly frustrating, as you can't hear what you are doing.

While in **record** or **playback** mode, you are offered a choice of six preset accompaniments for each of the other two voices, as well as a couple of 'user-defined' options. These can be put to use by manipulating blocks of notes in memory using option 6 (transfer notes) from the main menu.

A facility to synchronise the start of all three parts is provided, but this does not guarantee they will continue at the same speed! This, along with the difficulties in remembering what key does what, makes the whole system very clumsy indeed!

As you'd expect, Ultisynth contains **load** and **save** options for cassette and disk One slight problem here if a disk error occurs while loading or saving a music file, like you forgot to close the drive door, the whole program crashes and you are faced with the daunting prospect of re-loading (seven and a half minutes), and worse – re-writing

Documentation

The manual is approximately pocket-sized, and contains about 50 pages, including reference sheets to detach (and lose) a brief guide to sound and synthesis, and a fair coverage of the essential features of the program. Also included is a Basic program listing to allow the inclusion of music created on Ultisynth into your own games. The manual has a detailed Contents page, allowing easy access to the interior, providing you know what you are looking for

Conclusion

In my view, the whole idea of a program such as Ultisynth is to make the immense capabilities of the 64's SID chip easily accessible to the average 64 owner. Ultisynth attempts this but falls a long way short of being 'user friendly'.

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Multisound Synthesiser

Multisound is yet another cassette based synth package for the 64 this time from Romik. The cassette arrives in an oversized plastic wallet together with a pocket-sized 24 page manual – more on the later.

Loading Multisound takes an intolerable ten and a half minutes. You're finally presented with a control screen labelled 'special effects panel'. This panel contains information relating to **Voice 3** and allows you to produce special effects such as vibrato etc.

Pressing 'U' toggles between the special effects panel and the main control screen. The main control screen consists of rows of pseudo faders, operated by pressing the key named next to it. This system is one that I wholly approve of, as it resembles a 'real' synth control panel.

The main control panel contains only controls for one voice, mainly **Voice 1**, the voice you are going to play with. **Voice 2** is used exclusively for background tunes or rhythms, and are set up from the same control panel as **Voice 1**.

Playing modes

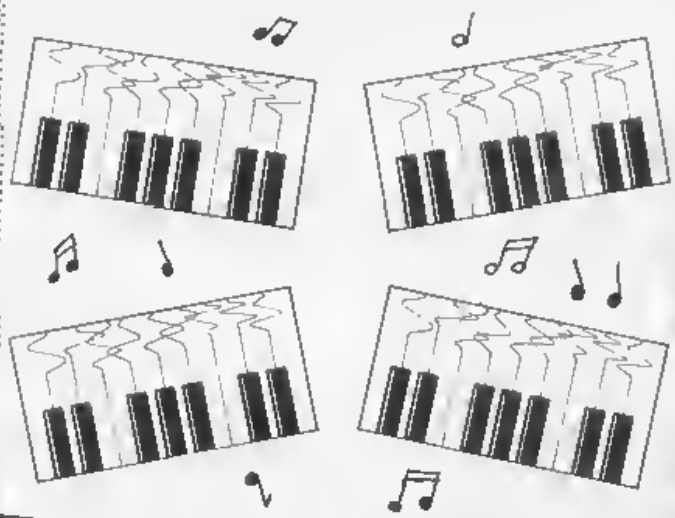
Various playing modes can be entered from the main control panel. Pressing 'F' gives you a piano-type keyboard on the screen. Pressing a designated key plays that particular note, and the corresponding piano key changes colour.

Pressing 'a' also gives you the piano type keyboard, but this time the computer records everything you play. Other facilities allow you to continue where you left off after visiting the main control panel, perhaps to change the sound slightly, or make use of Multisound's auto-space function. In this mode, the computer automatically spaces the notes out evenly at a tempo set from the special effects panel.

Of course, being able to record tunes is no good without being able to play them back. **Playback mode 1** allows you to listen to what you've just recorded, and to alter the parameters from the main control panel while you hear the results. **Playback mode 2** is identical to mode 1, but allows you to control the overall tempo with the '<' and '>' keys.

The background generator, as previously mentioned, can be used to store short repetitive tunes or drum patterns, or alternatively, use one of eight pre-programmed patterns. These can then be played back while you record over them with **Voice 1**.

A useful addition to the expected load/save routines is the merge function. This allows you to load a tune from tape, and append it to the tune in memory. Using this technique, a long tune can be written in short sections, stored on tape and then brought together.



The manual

The manual is a stiff-backed booklet, arranged in seven chapters. The first chapter gives a brief introduction to Multisound, and a description of some of the terms used later on in the manual. Chapters two and three give a brief introduction to synthesiser techniques and the nature of sound. Chapters four to seven describe in detail the Multisound system, and how to use it. Two appendices describe how to set up certain sounds, while a third gives suggestions for further reading. In short, the manual is everything a manual should be, and, being short, it is very easy to find the bit you want.

Conclusion

To sum up, Multisound is professionally packaged, and easy to use. The facilities offered are rather slim, but there is nothing noticeable missing – other than a turbo loader!

Under review	Synthy-64
Supplier:	Adamsoft
Address:	18 Norwich Avenue Rochdale Lancs
Telephone:	0706 524304
Summary:	Dedicated effort can produce excellent results
Price	£9.99 (tape), £12.50 (disk)

Under review	Ultisynth 64
Supplier:	Quicksilva
Address:	PO Box 6 Winborne Dorset BH21 7PY
Summary:	Good facilities but not very 'user-friendly'
Price	£14.95 (tape only)

Under review	Music Maker
Supplier:	Commodore Business Machines
Address:	1 Hunters Road Weldon, Corby Northants NN17 1QX
Telephone:	0536 205252
Summary:	A simple little package
Price	£5.55 (cartridge)

Under review	Multisound Synthesiser
Supplier:	Romik
Address:	272 Argyll Avenue Slough Bucks
Telephone:	75 71 535
Summary:	Easy to use but lacks facilities
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The 64 ought to be an excellent computer for games – and fortunately some suppliers are indeed taking advantage of that. Others aren't. Here's this month's crop of reviews.

How do we assess games? Basically we play them – which may sound obvious, except that all the reviewers have seen so many games that they can apply a bit of comparative experience to the evaluation.

We rate games out of five for each of four criteria. **Presentation** means how well the thing is packaged and how good it looks on the screen: dull graphics and poor sound get marked down here. **Skill level** refers to how much skill (of whatever kind) is required to play the game – so if pure chance is involved, the game gets a low mark. (But don't dismiss it on that: some 'chance' games are great fun.) **Interest** is an answer to how well the game did at maintaining the reviewer's interest in it. And **Value for Money** is obvious enough: it's our overall conclusion about how it compares with other games and whether we'd buy it ourselves.

SCREEN SCENE

BIZY BEEZZzz
Joystick or keyboard
Price £7.95

Poor Teddy is lost in the forest whilst on the way to the teddy bears picnic. He has discovered a huge bee hive full of honey and as he is beginning to feel rather hungry, you have to guide him through the 16 screens of ladders, lifts and moving platforms to empty the honeypots.

Unfortunately bees don't take kindly to teddy bears invading their hives and making off with their honey and are therefore very prone to sting if you can't move Teddy quickly enough. Very fast moving with good graphics and an excellent selection of tunes.

WG:PR

Solar Software

Presentation:	■■■■
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■■□□

BLUE THUNDER
Joystick or keyboard
Price £6.95

As the sole survivor of a once mighty invasion force you must skilfully pilot your Jetcopter through a bombardment of electronic storms, ground and sea-based missiles and attack from armoured barrage balloons. If you survive this lot you must then destroy the unstable nuclear reactor to rescue your comrades who are held captive beside it. Fortunately, the printed instructions include a diagram on how to blow up the reactor as this is not as easy as you might think.

Once you have completed a successful mission you will be debriefed and after a short rest be assigned to yet another demanding mission. It's a hard life, piloting Blue Thunder! Good graphics and somewhat addictive! *WG:PR*

Richard Wilcox Software

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■■□

CHUCKIE EGG
Joystick or keyboard
Price £7.90

The chief delight of this ladder/maze/platform conundrum lies in simply reaching out-of-the-way places in search of the corn and eggs needed to reach the next screen, whilst cocking a snoop at the prowling ducklings. However adept you become at coasting through the eight screens, when big Ma duck breaks free on level nine it's time for a re-think on the soundness of your tactics.

Delicate hops, deft jumps and evasive action are very much the order of the day. Definitely for the platform-jumper enthusiast, as the graphics and sonics can only be construed as adequate; but for stayers of the course the 256 levels (I asked A&F about that as I don't have the next two years free) proffer a stiff challenge.

Apart from being pecked to death it is very possible to come to grief by falling down a lift shaft ... oh yes! Lifts are an essential ingredient and add to the fun/frustration.

I'm afraid there seems to be a fly in the ointment .. it doesn't seem possible to skip some of the early levels which of course can lead to the "oh no! back to the start again" syndrome. So keep gaining points to earn extra lives. A quick-load system boosts the presentation mark. *iS*

A&F

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■■■□

CUTHBERT IN SPACE
Joystick or keyboard
Price £5.00

This is a tale of plunder, involving pillaging goodies from hapless civilisations throughout space. There are two screens. Incidentally, Cuthbert has to pilot a shuttle to pick up fuel pods, ferrying each one back to the mother ship before collecting another. Whirling "propellers" whiz across the field of play at variable speeds; these must be avoided or blasted.

The longer you hang on to a shuttle (i.e. a life) the more numerous

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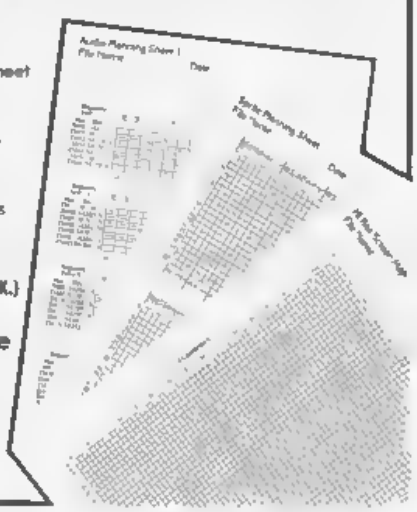

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...e missiles become. When sufficient fuel is on board it's time to collect the apparently extremely desirable objects raining down from the sky, still firing out the same defensive system, until the going gets too hot and discretion dictates a departure for pastures new.

The pattern is frequently punctuated by an unusual phase. Briefly, you need to match one set of co-ordinates with another then return to the first value. The catch is that the numbers are increased/decreased by using a different joystick/cursor control each time. Naturally a life depends on completing the exercise within a given time.

Twelve levels (you may skip the first seven) should provide challenge enough for any budding Cuthbert. Very colourful, but little in the way of spectacular graphics and sound. *LS*

Microdeal

Presentation:	■■■■
Skill level:	■■■■
Interest:	■■■
Value for money:	■■■

DICKY'S DIAMONDS
Joystick or keyboard
Price £6.95

We have a deceptively hard teaser here centered around a spider's web. Being a remarkably small owl you find it easy to run along the strands of silk, eliminating them as you go, until the whole web is destroyed. But you can fly from one section to another should there be no connecting thread left intact. Why should you do this? 'Cos the spider has nicked your diamonds and keeps one on display slap-bang in the middle of his silken net. Unravelling it is the only way to retrieve the jewels.

The spider, unfortunately, does tend to make running repairs, that could well be a sign of faulty tactics on my part. I managed to succeed and flew off with one diamond, plenty more left, as always, with two spiders to contend with later in the game.

The last thread to be removed must be a central one otherwise there's just a spectacular structural collapse but no gem stone.

Plenty of options to mull over: speed, starting level, unlimited lights (or just the total allowed for by the current screen), second spider, plus the ability to save the high score to tape. Fair sonics including flapping wings and a title theme with a couple of neat visual effects. *LS*

Romik

Presentation:	■■■■
Skill level:	■■■■
Interest:	■■■
Value for money:	■■■■

A REAL ACTION SHOT OF THE GAME

FELIX IN THE FACTORY
Joystick only
Price £6.95

The tried and tested ladder/maze features once again. Indeed there is nothing original in the program, but like all good recipes, the ingredients have been well chosen and skillfully blended to present an appealing offering which will have you clamouring for second helpings. The man-of-the moment is faced with the task of topping-up a generator with oil. True to form the oil-can is anywhere but in a convenient position, so it's a dash along the conveyor belt, jumping over parcels and up the ladders to the upper floors of the factory.

Gremlins (up to three species) are on the prowl presenting you with the choice of evasion or trying your luck at impaling them with a pitchfork. The odd, squealing super-rat tends to dash across any floor at random necessitating a perfectly timed jump you may even poison him for a bonus. Failure to stoke the generator within the alloted time costs a life as does carelessly bumping into a monster. But tumbling over a parcel merely deprives you of the oil-can you might be carrying, plus precious time.

As far as I can see there is just one screen, although success ushers in further supplies of enemies to provide variation. The author has succeeded in producing a challenging game. Should you require only one example of the ladder/maze idiom then a good version of *Kong* will provide greater depth. *LS*

Micro Power

Presentation:	■■■
Skill level:	■■■■
Interest:	■■■
Value for money:	■■■

GILLIGAN'S GOLD
Joystick only
Price £6.90

Ocean Software continue to produce excellent games, and *Gilligan's Gold* is no exception. The objective is to help Gilligan collect bags of gold and place them in the wheelbarrow before time runs out, while at the same time outwitting the outlaws who are after you – and the gold. Each bag you collect gives you more time but they do slow you down. To avoid the outlaws you can jump on the trucks (by hanging on to the hooks) or escape via the ladders and lifts, but do watch out for the mine shafts, they're deep and deadly!

Good graphics and a catchy tune add up to another enjoyable Ocean game. *WG/PR*

Ocean Software

Presentation:	■■■■
Skill level:	■■■
Interest:	■■■■
Value for money:	■■■■

GYROPOD
Joystick only
Price £6.90

A two-screen cosmic-combat jamboree featuring a novel depiction of a space ship. The game opens with a module (you're inside) docking with a doughnut-shaped mother ship, which is shown in three quarter view perspective. By now you have taken control of the blue, double-barrelled gun turret which can be zoomed all around the outer circumference of the ring.

Thanks to the magic of sprites you can see the position of your blaster even when on the reverse side of the bottle ship's rim. To annihilate the oncoming, gyrating UFOs, fire will have to be directed from all sides of the silver craft.

Run out of ammo? Or perhaps the shields are weakening. If so catapult down to the nearby planet (the same one that's due for the chop), taking care to ease-up and land gently; grab some supplies whilst warding off the aliens with your stun pistol, then hop back in and blast off.

When all the UFOs have been despatched and their planet is warped into eternity, it's time to terrorise another civilisation with their own ideas as to how space ships should be designed. So it continues through four waves of alternating mass devastation and hand to hand confrontations.

Strong on sound, as it seems everything from Taskset is going to be, with the pictorial side showing flair and imagination. *LS*

Taskset

Presentation:	■■■■■
Skill level:	■■■■
Interest:	■■■■
Value for money:	■■■■■

HOUSE OR USHER
Joystick only
Price £6.95

Got a few months to spare? If so, and you relish nigh impossible

challenges then this could be your red letter day. Don't be fooled by the entrance hall, enter any one of the eight doors and you face such obstacles as cannon balls, disappearing floors, pounding pistons, monsters and various other bizarre, highly improbable obstacles. This is the stuff that joystick acrobats thrive on.

On the impressive title screen you arrive at the creepy mansion and climb the stairs to the door. I couldn't understand the relevance of the particular accompanying music, but what the heck. If you ever manage to wend your way through the eight rooms jam-packed with seemingly insurmountable hurdles, the door to the treasure chamber is opened to you, to be followed by revelations as to the meaning of life, or something similar. Honest, it's really tough... well.. extra tough. And the faint hearted shouldn't touch it with a barge pole. *LS*

Anirog

Presentation:	■■■■□
Skill level:	■■■■■
Interest:	■■■□
Value for money:	■■■■■

ICE HUNTER
Joystick or keyboard
Price £6.95

Another fast loading program – the software companies are really getting the idea now. Thorak, Prince of Ice, has made his way into the multi-level cave. Now all he has to do is collect the blocks of ice necessary to build a very special igloo. However, the path of igloo-building is not that straightforward and Thorak has to fight off some very strange creatures, the first of which is a dragon-like beast wandering about the first three levels. Kill it either by dropping a block of ice on its head, or when the occasion arises, and after eating a power pill, by crushing it underfoot.

Thorak can drop his ice blocks through patches of thin ice which will only bear his weight once, to move from level to level he must use the support pillars. Once he has travelled from the kingdom of the dragons he reaches the kingdom of the strange mutant sea-lion species, and he cannot go back to collect any blocks left behind or to escape the sea-lion.

Finally Thorak (no doubt exhausted by now – I certainly was!) has to float the blocks downstream to his igloo for storage. Then he has to return to another cavern to gather more blocks. Not unnaturally, Thorak faces greater and more threatening dangers in his efforts to build his dream igloo.

Good graphics, very little in the way of sound, but all in all a good game. The ice effects are so realistic; my fingers felt quite cold whilst manipulating the joystick! *WG/PR*

Anirog

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

MR DIG
Joystick or keyboard
Price £8.00

This is (unfortunately) very similar to PacMan in its somewhat basic approach. Mr Dig must dig for hidden food supplies in the Meanies territory below ground. As he digs he can eat his way round cherry groves whilst being followed and attacked by the Meanies which can be crushed by dropping apples on them. Meanies can't dig tunnels or eat cherries, but watch out that they don't change into miners, which can do both. Every so often a fallen apple will split open and reveal a sparkling diamond – collecting this increases your score immensely.

Also introduced into the game are mallers (mallers?) and a later monster. You can destroy the mallers individually, when they will mutate into apples, or they will disappear when the latter monster is destroyed. You can destroy opponents either by launching your power orb or by dropping apples on them!

There are nine levels of play from Baby to Masochist, so there should be a level to suit most people. *WG/PR*

Microdeal

Presentation:	■■■□□
Skill level:	■■□□□
Interest:	■■□□□
Value for money:	■■□□□

NURSERY NIGHTMARE
Joystick only
Price £7.50

Not a blockbuster but an extremely enjoyable, simple game with five levels of genuine increasing difficulty – the situation changes, not just the tempo. Everything revolves around your attempts to keep your offspring bloated with milk. The screen is divided into three lanes, separated by green lines; you, the harassed husband, may cross them with impunity. But if you attempt to take baby with you, on storms the apple of your eye to bonk you on the head. She will also appear if you drop your infant on the floor or fail to return with the milk in time.

You will need to carry the baby to the top of the screen, release it, zoom across to pick up a bottle, then backtrack in time to catch the infant who is tumbling toward the foot of the screen. No time to lose, as the countdown has resumed, back to the top and make for the next bottle.

Level two sees the milk moving as well as the toys while the next trial of skill forces you to cross two lanes: it's just like running across the M1 and back again. Obviously timing, anticipation and sharp reflexes are needed. Nothing special about the graphics nor the sound, which just complements the action. Refreshingly uncomplicated entertainment. *LS*

Cable Software

Presentation:	■■■□
Skill level:	■■■□
Interest:	■■■□
Value for money:	■■■■

ORC ATTACK
Joystick only
Price £7.95

The Orcs are coming! They are scaling the castle walls and trying to stab at you with their murderous daggers. A crossbow bolt zips past your left ear – but are you afraid? No! You are Sir Eric the Brave, vile Orcs will not get the better of you.

Armed with rocks, boiling oil (very nasty!) and your trusty broadsword, you must fight the Orcs until the last one is dead. But even then the castle is not safe – the evil Sorcerer appears and commands his spirits to attack you. You may survive and slay him, but now the dreaded Stone Warts are after you. It's a never-ending task, defending a castle these days!

Full sound and good graphics make this an enjoyable game, though the picture on the package frightened the cat! And they ask if you want a free poster version of it as well... *WG/PR*

Creative Sparks

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■□□

PESKY PAINTER
Joystick or keyboard
Price £6.95

The first screen discloses four palace guards pursuing the painter chappie, making sure he prepares the surfaces instead of just slopping on the jollop. You have to outthink and out run them until you've travelled every corridor, cleaning up the whole caboodle. When the four corners have been coloured it's the guards' turn to skedaddle, adding bonus points, if you catch them, to your score for each completed square.

A brief intermission for the bonus screen, guide the creature to a bunch of bananas, then down to business. Your chance to paint, now that you have turned into a paint brush. But each room has to adjoin a previously painted area. To help you avoid the mouse-like pursuers three fire crackers are at your disposal. Succeed takes you back to a harder screen one, one extra guard and naturally a change of colour scheme.

Musically speaking the contents are very similar to Paramount's *Outback 64*, which is a fair recommendation. *LS*

Super Soft

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■■■

TURTLE JUMP
Joystick only
Price £6.95

What a dinky game! You are a giant ant living on a treasure chart; on an island in the centre, to be precise. Naturally you feel compelled to travel to the outlying land masses, to Eldorado in particular. Of course the journey isn't easy; you can jump short distances across logs and magic islands but the main method of travelling is to hitch a ride on a turtle. You have to keep with them, or splash away one life, and be prepared to swap reptiles in midstream in order to make progress.

Their direction changes in response to obstructions, but beware of the crocodile which causes the flotilla to crash dive. Having arrived at the treasure chest make sure that you don't get squashed by the lid by spending too long grabbing the gold. On the way back to base you may deem it advisable to make a detour to stoke-up your energy levels by gobbling bonus fruits.

Precise joystick control, with an appreciation of just how far you can leap, is a must. The peculiar sound effects enhance an interesting, though uncomplicated game which is bound to grow on anyone who doesn't demand incessant mayhem. *LS*

Romik

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■

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SCREEN SCENE

TYPING WIZARD
Keyboard only
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Although not a game, we've decided to include Typing Wizard here as somebody somewhere may conclude typing is fun.

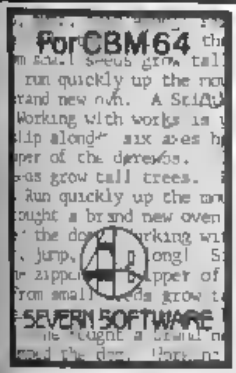
Have you ever been ashamed to put your two fingers to the keyboard, having witnessed a dizzying feat of ten-fingered touch typing? Well, now help is at hand – you can improve your typing prowess in secret, using this patient tutor from Severn Software. In a series of lessons, ranging from the home keys to the whole keyboard, you are shown a graphic keyboard, with your fingers resting where they should be. You must type exercises exactly as shown on the screen, the computer beeps and rejects any wrong keys. The letters are single letters, followed by groups of letters. At the end you are told how many errors you made, and your average typing speed. Also included is a speed test – you simply choose your own text, and type away. The 'Copy-what you see' exercises will also help keep your eyes away from the keyboard, a good discipline.

One niggling point, though: the program uses F7 as its Continue key, which can be awkward when you're at the start of a lesson, setting up your fingers as instructed. Having just arranged your fingers correctly you must then remove your hand and press F7 to continue. Nevertheless the program should prove useful to those of you who need to become proficient typists.

DW

Severn Software

Presentation:	■■■■□
Skill level:	n/a
Interest:	n/a
Value for money:	■■■■■



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At last, Legend has released *Valhalla* for the 64. I say at last, because it made Game of the Year on the Spectrum. But this new version not only equals, but improves upon the original. Apart from running faster on the 64, the characters are now in colour - and there is a 'mono' command for those with monochrome monitors and TVs, which selects a more limited, but easier to see, colour scheme.

For those who don't know what all the fuss is about, I shall attempt the impossible, in describing *Valhalla* in one paragraph. It's a real time adventure game in which the players must find magical objects. As you roam through the graphically depicted locations, you can gather food, weapons, armour and other such items along the way, which are vital to your survival. The player and any other characters nearby are presented by little animated figures which move, fight, eat, drink and generally act out the adventure as described by the text.

As the game is in real-time, even if you didn't do anything, the other characters aren't idle, and will come and go as they please, often fighting amongst themselves – and with you, depending on their opinion of you. One thing about the 'animaction' taking place all around you is that you may actually have to wait a while before the computer processes your command, as you must wait for events such as fights and deaths to end. As the player is depicted on the screen, it is possible to move left and right – to reach a bottle of wine, for instance – and not just the normal N-S-E-W of other adventures. If you issue a command such as 'Get Sword', you will see the player-character do just that on screen.

I have only scratched the surface of the complexities of *Valhalla*. I could write a book just describing it – indeed, the instructions provided with it are themselves on the meaty side. The what-you-see is what-you-get approach to the accompanying graphics is an interesting approach (they call it MOVISOFT).

In conclusion, I hardly have to add that this is a complex, well thought out adventure, which will keep the most intrepid of adventurers amused for many hours of good adventuring. Happy Adventuring!!!

Legend *DW*

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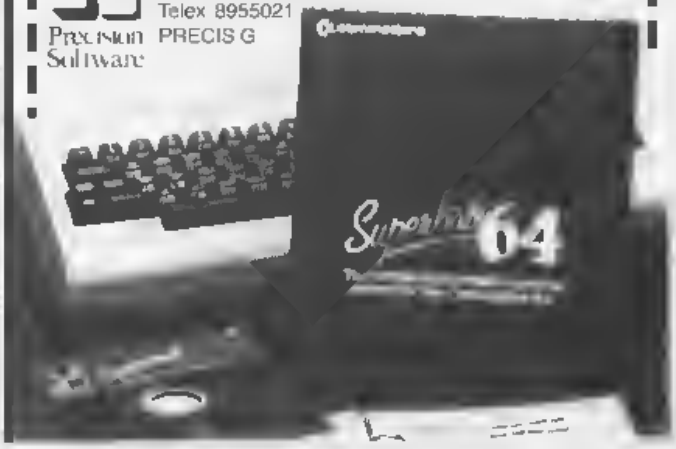

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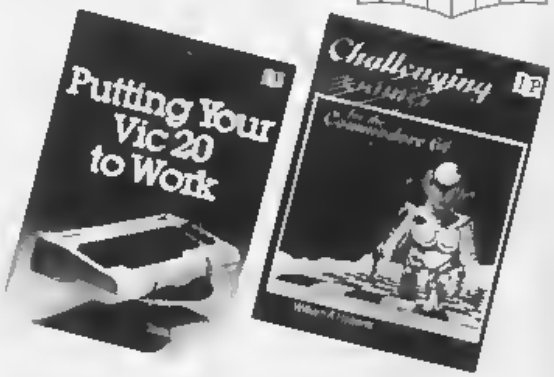

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Commodore Français — frenchify your Vic or 64

by George Pike

Fed up with boring old French tests? This seems like a good job to sub-contract to the computer. English is no problem; but what do you do about those tricky French accents? One way would be to chicken out and work entirely in capital letters. No accents required then, but that's hardly helpful.

Once you've discovered user defined graphics, it's easy enough to design the accents and put them into the computer. But then the question is how to get them in the right place and get rid of them from the wrong place. And wouldn't it be nice to put them on the function keys – four keys for three accents and the cedilla?

Then Tommy came to the rescue, he gave me the idea of using GET statements to feed words into the computer rather than INPUT. The disadvantage is that there is no flashing cursor. The advantage is that each letter and string is put in and stored separately and the word built up after RETURN has been hit. Accent strings consisting of the defined graphic and necessary cursor controls can then be assigned to the function keys by a set of four lines, for example **IF X$ = CHR$(133) THEN X$ = A$** (**A$** being one of the four accent strings).

Before starting on the program itself, here are some practical points.

Some points for VICtims

The programs only work with the unexpanded Vic or with either 3K expansion or the Super Expander. The actual Frenchifying uses up most of the unexpanded Vic so one of these cartridges is virtually essential for a practical program.

With the Super Expander, either assign the strings to other keys or disable the function keys before starting to LOAD or program. To disable the keys, type in **STS64850: POKE 641,0: POKE 642,4: POKE 643,0: POKE 644,30: POKE 648,30: SYS 64824** and RETURN. Again, thanks to Tommy. The screen changes to show **6650 BYTES FREE** and the function keys are all yours.

If you're going to use the Programmer's Aid Cartridge, the function keys are a pain. Assign the strings to other keys. To do this, simply alter the **CHR$** numbers. The values for each key are in the users' manuals. They can be assigned back to the function keys immediately before the program is SAVEd.

The 64 Screen

What maniac chose the colours of the 64 switch-on screen I do not know. Line 100 is simply to make the text legible. Please yourself.

And remember, *SAVE before you RUN user defined programs*. Once Stage Two is working, it is time to add the user defined accents, that is the 200+ and 300+ blocks. SAVE before you do this and SAVE again before you RUN the program. One error in the 200's can crash the 64 and all that has gone before is lost – most annoying.

Allons y

Do not be alarmed by four listings. They follow on from each other, building the final program up in stages to demonstrate the routines used. By leaving the 'real' accents to a later stage, a lot of time is saved when *RUN*ning to test and explore intermediate stages.

Stage One: just follow the program listing. **The M** in line **930** is not needed yet but it is safer to include it now. As each

Map of France, Britain's nearest neighbour in Europe

Stage One listing

```
100 POKE53280,2:POKE5 :PRINT"{CLR}
400 TIME$ = "000000"
500 PRINT"{DOWN}{3 RIGHT}TIMER IN HOUR MODE
600 N=1:M=1
700 GET A$:IF A$="" THEN 700
800 IF A$=CHR$(13) THEN 1000
900 PRINTA$;:IF N=1 THEN N=2:M=1:GOTO 700
930 IF N=2 THEN N=3
950 N=1:GOTO 700
960 FOR I=1 TO 1000:NEXT:PRINT"{CLR}":NEXT I
1000 PRINT"{CLR}{2 DOWN}{5 RIGHT}THIS WILL BE THE TIME TAKEN
TO TYPE THE WORDS
6 PIECES.
1010 FOR I=0 TO 999:NEXT:PRINT"{CLR}":A=VAL(TI$)
1020 PRINT"{DOWN}{5 RIGHT}THIS PROGRAM TOOK";A;"SECONDS."
```

letter is fed in at **line 810** the letter count is advanced by one. The DELete key functions normally and RETURN is used to signal that the word is complete

So far just like INPUT without the flashing cursor. But with one exception, the word is not yet built up. That is done in **line 980** The first word is **W$(0)**, the second **W$(1)** and so on. **L$** and **W$** must be DIMensioned in **line 400** up to the maximum number of letters in a word and the maximum number of words to be fed in.

Type the program in and RUN it. Not sensational but a start. The computer should ask you to type in your word. Do this and when it is correct hit RETURN. There should then be a list of words typed in so far and an invitation to press a key to add to the list.

Eventually the program will operate in 'Typewriter' mode This means that any letters that are finally to appear as capitals must from the beginning by typed in as SHIFTed characters Looks a bit odd at this stage, but so what?

Stage Two: now we come to the important bit, the accents. Or, at this stage 'sort-of' accents But never fear accents they will be in due course.

Stage Two is simply Stage One with some lines added Type in the extra lines and amend **line 910 Lines 90, 905** and **910** can be removed now **Lines 410-460** contain the accent and accent delete strings The accents are going to be on Commodore-shifted **X, C, V** and **B** and for now those graphics symbols will be used as accents

Accents don't need to be printed an extra space out. In fact one of the things an accent string does is to pull the character back a space We must then count two things separately, the number of letters and accents and how far out to print **N** counts how many and **M** how far.

The program works very much as Stage One except that the function keys put strange graphics above or below letters. Have faith, they will be accents soon. Press the function key after the letter which the accent or cedilla is to go over or under.

Once this stage is working, it is time to SAVE the program. Now to business, the computer is to be Frenchified.

Stage Two listing

```
90 REM  THREE TWO
100 POKE53,28:POKE52,28:POKE56,28:CLR:PRINT"[RED]
400 DIM L$ [ 20 ] ,WF (20)
410 A$= "[CU][CL][15 ]"+"[CL]"
420 B$="[20][CL][15 ]"+"[CL]"
430 C$="[CU][CL][15 ]"+"[CL]"
440 D$= "[CD][CL][15 ]"+"[CL]"
450 Y$= "[CU][CL] "
460 Z$="[CD][CL]"
500 PRINT"[CLS][4 CD] [6"TYPE IN YOUR WORD.";
510 PRINT"[11 CD][10SPC][15 CU][RVS]"+A$+"[OFF]"+B$+"[OFF]"+C$+"[OFF]"+D$
520 PRINT"[19SPC][3CD]"+Y$+Z$+"[3 CU]"
530 PRINT"[19SPC][2CD]"+Y$+Z$+"[3 CU]"
540 PRINT"[15 CU]WHO ARE YOU[5CD][RVS]"+A$+"[OFF]"+B$+"[OFF]"+C$+"[OFF]"+D$+"[OFF]."
550 N=0:M=0
560 GET L$(N):IF L$(N)=""THEN560
570 IF L$(N)=CHR$ ( 13 )THEN L$ (N)=""
580 IF L$(N)=CHR$ ( 148 )THEN L$(N)="
590 IF L$(N)=CHR$ ( 20 )THEN L$(N)=""
600 IF L$(N)=CHR$ ( 32 )THEN 650
610 IF L$(N)=CHR$ (60)AND L$(N-1)="A"THEN L$(N-1)="Â"
620 IF L$(N)=CHR$ (60)AND L$(N-1)="E"THEN L$(N-1)="Ê"
630 IF L$(N)=CHR$ (60)AND L$(N-1)="I"THEN L$(N-1)="Î"
640 IF L$(N)=CHR$ (60)AND L$(N-1)="O"THEN L$(N-1)="Ô"
650 IF L$(N)=CHR$ (60)AND L$(N-1)="U"THEN L$(N-1)="Û"
660 REM IN LINE 910 CHANGE SPC(N+2) TO SPC(M+2
670 PRINT"[HOME][19 CD]"SPC(M+2);L$(N);
680 IF L$(N)<>CHR$(ANDL$(N)) AND L$(N)<>CHR$(ANDL$(N)+128)THEN M=M+1
690 IF L$(N)=CHR$ (20) THEN N=N-2:M=M-2:PRINT"[5 CU]
700 IF L$(N)=CHR$(13)OR L$(N)=""THEN N=N-1:M=M-1
710 IF N<0 THEN N=0
720 N=N+1:GOTO560
730 FOR W=1 TO N-1:W$(W)=W$(W)+L$(W):NEXT W
1000 PRINT"[CLS][7CD][25SPC][3CD][5"WHILE 25SPC][GOLD]IN [1][GO_][GO [1][GO]SPC][1]O[GO][GOS
PC][GOY][GOO][GOU][GO][GOR][GOSPC][GOW][GOO][GOP][GOD][GOS][GOSPC][GOS][GOO][G SPC][
GOK][GOA][GOR]."
1010 FOR P=0 TO N:PRINT"[3LD]"SPC(4+W$(P));NEXT P
1020 PRINT"[2LD][25SPC][GOT]O ADD TO THE LIST  PRESS ANY KEY.
1030 GET R$:IF R$=""THEN1030
1040 W=W+1:GOTO560
```

Stage Three listing

```
 0 REM FRENCH WORD, N PROGRAM TO REMOVE AND PRINT WORDS IN FRENCH.
50 REM BY GEORGE PIKE, MCMLXXXIII
100 POKE53280,3:POKE53281,7:PRINT"[RED]"
190 REM THE 200 & 300 BLOCKS ARE DIFFERENT FOR THE 16 K  ONE  I  FIX THE
200 POKE53272,(PEEK(53272)AND240)+4.
210 POKE52,48:POKE56,48:CLR
220 POKE56334,PEEK(56334)AND254
230 POKE1,PEEK(1)AND251
240 FORX=820727
250 POKE1,PEEK(1)OR4
260 POKE56334,PEEK(56334)OR1
300 FOR I=0TO31:READA
310 POKE12800+I,A:NEXT
320 DATA0,0,2,4,8,16,32,0,0,0,0 3,  c  ,4,,,0 0,0 0,',,0,74,75,0
330 DATA32,32,60,4 4,124,0,0
400 DIM L$(30),WF 30)
410 A$= "[CU][CL][6SPC][CD]"
420 B$="[CU][CL][6SPC][3CD]"
430 C$="[CD][CL][6SPC][CD]"
440 D$="[CD][CL][6SPC][CU]"
450 Y$="[CU][CL] "
460 Z$="[CD][CL] "
500 PRINT"[CLS][4CD] [6 ]LE IN YOUR WORD."
 10 PRINT"[11CD][10SPC][15 CU][RVS]"+A$+"[OFF]"+B$+"[OFF]"+C$+"[OFF]"+D$
520 PRINT"[19SPC][3CD]"+Y$+Z$+"[3 CU]"
530 PRINT"[19SPC][2CD]"+Y$+Z$+"[3 CU]"
540 PRINT"[15SPC]AND THE[5CD][RVS]"+A$+"[OFF]"+B$+"[OFF]"+C$+"[OFF]"+D$+"[OFF]."
550 N=0:M=0
 60 GET L$(N):IF L$(N)=""THEN60
 70 IF L$(N)=CHR$ ( 13 )THEN L$ (N)=""
 80 IF L$(N)=CHR$ ( 148 )THEN L$(N)=""
 90 IF L$(N)=CHR$ ( 20 )THEN L$(N)=""
100 IF L$(N)=CHR$ ( 32 )THEN 400
110 IF L$(N)=CHR$(60)AND L$(N-1)="A"THEN L$(N-1)="Â"
120 IF L$(N)=CHR$(60)AND L$(N-1)="E"THEN L$(N-1)="Ê"
130 IF L$(N)=CHR$(60)AND L$(N-1)="I"THEN L$(N-1)="Î"
140 IF L$(N)=CHR$(60)AND L$(N-1)="O"THEN L$(N-1)="Ô"
150 IF L$(N)=CHR$(60)AND L$(N-1)="U"THEN L$(N-1)="Û"
```

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Stage Three: the principle listing is for the 64. For the Vic replacement lines are given for **lines 200-310**. The DATA lines are the same for both computers. Type in the extra lines and SAVE. With the 64 one error in the **200's** and **300's** can crash the computer and lose the lot.

In the 200- and 300- blocks, user-defined graphics create the three accents and cedilla and PEEK and POKE the 'typewriter' keyboard from ROM to RAM.

Finally RUN the program. Chaos will appear on the 64 screen and slowly bring itself to order. If there are no mistakes you will shortly be invited to 'Type in your Word'. Accents are now accents. The computer is in 'Typewriter' mode, spades have become **A's** and hearts **S's**, SHIFT produces capital letters. Your computer is Frenchified at last.

The Final Stage

French Word is not particularly useful except to show how the computer can be frenchified. The most useful programs work in pairs of words **E$(1), F$(1), ...** These are put into the computer and when all the strings have been entered the **E$'s** are displayed one by one and the French demanded. The entry is then compared to the appropriate **F$**.

So now we must type in our words in pairs. First we must tell the computer how many pairs there will be and DIMension enough strings to accept them, **lines 470** and **480**. Because we might re-run the program with a new longer list and need to CLeaR and reDIMension, all DIM statements should now be moved to **line 460**. Remove **line 400** to avoid a REDIMENSION ERROR.

Line 490 sets up a loop to take in the word pairs. **Lines 550** and **600** take them in and when this is finished, **line 610** sends us off for a test on them.

To print our entry words on different lines and make two sets of word strings calls for some changes to the **600** and **800 blocks**. Thus **line 800** becomes:

800 W$=""N=1:M=1

We need an empty word string in which to build our word. The contents of **W$** are transferred to the string to be stored once the program has RETURNed.

```
400 IFL$(N)=CHR$(20)ANDL$(N-1)=CHR$(20)THENL$(N)="":N=N-1:M=M-1
410 PRINT"{HOME}{8 DOWN}{SPC}";N+2;L$(N)
420 IFL$(N)>CHR$(64)ANDL$(N)<CHR$(91)ANDL$(N-1)<CHR$(65)THEN M=M+1
430 IFL$(N)=CHR$(20) THEN N=N-2:M=M-2:GOTO450
440 IFL$(N)=CHR$(13)THEN N=N-2: M=M-1
450 IFN<1 THEN N=1
460 IFN>1THEN M=1
470 N=N+1:GOTO410
480 FOR D=1 TO N-1:W$=W$+L$(D):NEXT D
1000 PRINT"{CLR}{2DOWN}{3SPC}{RVS}  {4 SPC}{OFF}  {SPC}{RVS}{DOWN}{LEFT}  {SPC}{OFF}  {SPC}{RVS}{DOWN}{LEFT}  {SPC}{OFF}"
1010 FOR P=0 TO 4:PRINT"{3CRSR}SP{4 SPC}";:NEXT P
1020 PRINT"{2DOWN}{2SPC}{6 SPC}ADD TO THE LIST, PEEP  ANY KEY."
1030 GETK$:IFK$=""THEN1030
1040 P=P+1:GOTO500
```

Vic replacement lines for Stage 3

```
200 POKE 56334,PEEK(56334)AND254
210 POKE 1,PEEK(1)AND251
220 FOR I=8192 TO 8199:READ A:POKE I,A:NEXT
230 POKE 56334,PEEK(56334)OR1
240 POKE 1,PEEK(1)OR4
250 DATA 0,0,2,4,8,16,32,0
300 POKE 56334,PEEK(56334)AND254
310 POKE 1,PEEK(1)AND251
```

FINAL LISTING

```
100 REM JESI'S FRENCH, A SIMPLE FRENCH VOCABULARY PROGRAM.
110 REM BY GRAHAM PIKE, MAY '85
200 POKE52,28:POKE56,28:CLR:PRINT"{RED}"
210 REM THE '28's ABOVE RESERVE HI-RES MEMORY FOR THE UDG.  THIS IS FOR THE 64.
220 POKE52,2:POKE55272,PEEK(55272)AND240+12
230 POKE52,43:POKE56,43:CLR
240 POKE56334,PEEK(56334)AND254
250 POKE1,PEEK(1)AND251
260 FOR I=8192TO8199
270 READA:POKEI,A:NEXTI
280 POKE56334,PEEK(56334)OR1
290 POKE1,PEEK(1)OR4
300 POKE56334,PEEK(56334)OR1
310 FORI=0TO31:READA
320 POKE13288+I,A:NEXTI
330 DATA0,0,2,4,8,16,32,0,0,0,32,16,8,4,2,0,0,0,4,8,20,34,65,0
340 DATA32,32,60,4,4,124,0,0
410 A$="{DOWN}{CLR}{6 SPC}{RED}"
420 B$="{DOWN}{CLR}{6 SPC}{DOWN}"
430 C$="{DOWN}{CLR}{6 SPC}{RED}"
440 D$="{DOWN}{CLR}{6 SPC}{CYN}"
450 V$="{DOWN}{CLR} "
460 Z$="{DOWN}{CLR} "
470 PRINT"{CLS}{7DOWN}{12SPC}{6 RVS} PROGRAM TO TEST FRENCH VOCABULARY."
480 INPUT"{4DOWN}{3SPC}{RVS}NUMBER OF WORD PAIRS";UN:DIME$(UN),F$(UN),L$(30),TN(UN)
490 FOR W=1TOUN
500 PRINT"{CLS}{4DOWN}{6 SPC}TYPE IN THE {6 SPC}";W;"{1 SPC}";
510 PRINT"{2DOWN}{10SPC}{RVS}{5 SPC}ENGLISH{2SPC}{OFF}{2SPC}{RVS}{5 SPC}";
520 PRINT"{2SPC}{3 SPC}{2SPC}{OFF}{2SPC}{6 RVS}";
530 PRINT"{2SPC}{3 SPC}{2SPC}{OFF}{2SPC}";
540 PRINT"{5SPC}AND PRESS {2SPC}{RVS}{5 SPC}";
550 GOSUB600
560 E$(W)=W$
570 PRINT"{2DOWN}{2SPC}{UNDON}THE {6 SPC}";W;".";:F=6
580 GOSUB600
590 F$(W)=W$
600 W$="":N=1:M=1
610 GET L$(N):IFL$(N)=""THEN610
620 IFL$(N)=CHR$(13)THEN800
630 IFL$(N)=CHR$(34)THENL$(N)=B$
640 IFL$(N)=CHR$(35)THENL$(N)=C$
650 IFL$(N)=CHR$(36)THENL$(N)=D$
660 IFL$(N)=CHR$(13) THEN680
670 IFL$(N)=CHR$(20)ANDL$(N-1)=A$THENL$(N)=V$
680 IFL$(N)=CHR$(20)ANDL$(N-1)=B$THENL$(N)=V$
690 IFL$(N)=CHR$(20)ANDL$(N-1)=C$THENL$(N)=V$
```

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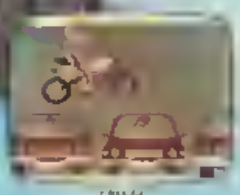

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Line 910 becomes two lines

```
905 PRINT (HOM)
910 FOR PD = 1 TO F:
    PRINT"(CUD)": NEXT PD:
    PRINT SPC(M+2)L$(N)
```

Finally line 980 becomes:

```
980 FOR D = 1 TO N-1:
    W$=W$+L$(D):NEXT D:
    RETURN
```

The word pairs are now installed. Now for the test. **Line 610** has sent us on our way. **Lines 1000** to **1040** are no longer needed. **Lines 2000** to **2110** are the test. **2010** chooses the pair for each question, **2020** and **2030** make sure we haven't had that pair before. Each pair then is included once and only once in random order. Lines **3000** to the end give simple options to end, re-test or start a new test.

This is simply a skeleton for a French test. One obvious area for development is in responding to wrong answers. There are all sorts of possibilities to include time, scoring how many right first time, keep a record of the best time and name the current champion (watch CLR and DIM for that one). It all makes good use of the computer and may even lighten your chores. Bon chance.

Keybeep

by Fred Reid

This program produces an audible bleep from your TV whenever you press a key on your Commodore 64. This is particularly useful when copying software from magazines; you don't have to look at the screen to verify that you actually pressed a key. As each key produces a different tone, you can soon get to recognise a wrong keystroke.

The routine runs entirely in machine code, and is located at $C000 (49152 decimal), and occupies only 120 bytes – so it's small enough to insert into your own programs.

The machine code program is split into two parts. The first part is used to set up the SID chip, and change the interrupt vectors to point to the second routine at $C037. The second routine examines the current key being pressed, and uses it's ASCII value to provide the pitch information for the SID chip. If a key is being pressed, the Gate bit ($D404) is flipped on, then off, to start the note. The routine then jumps to where the interrupt vector originally pointed to (before the first routine altered it), and the computer continues as if nothing had happened.

When run, the Basic loader reads the DATA statements, and POKEs them into RAM. When this is done, the initialising routine is called by **SYS49152**, and the Basic loader is NEWed. At this point the beep can be enabled by pressing **f1**. Pressing **f3** will turn off the beep. If you press RUN/STOP and RESTORE, the routine will have to be re-initialised (SYS49152) before it will work again.

– Assembler listing

```
C000  78          SEI
C001  AD 1A 03    LDA $031A
C004  8D 2E 03    STA $032E
C007  AD 15 03    LDA $0315
C00A  8D 2F 03    STA $032F
C00D  A9 37       LDA #$37
C00F  8D 14 03    STA $0314
C012  A9 C0       LDA #$C0
C014  8D 15 03    STA $0315
C017  A2 10       LDA #$10
C019  A9 00       LDA #$00
C01B  9D 00 04    STA $0400
C01E  EA          NEX
C01F  D0 FA       BNE $C01B
C021  A9 03       LDA #$03
C023  8D 05 04    STA $0405
C026  A9 00       LDA #$00
C028  9D 08 04    STA $0408
C02B  A9 0F       LDA #$0F
C02D  8D 18 D4    STA $D418
C030  A9 00       LDA #$00
C032  8D 34 03    STA $0334
C035  58          CLI
C036  60          RTS
C037  A5 C5       LDA $C5
C039  C9 0A       CMP #$0A
C03B  F0 07       BEQ $C044
C03D  C9 05       CMP #$05
C03F  F0 0B       BEQ $C04C
C041  4C 34 E1    JMP $C034
C044  A9 FF       LDA #$FF
C046  8D 34 03    STA $0334
C049  6C 2E 03    JMP $032E
C04C  A9 00       LDA #$00
C04E  8D 34 03    STA $0334
C051  6C 2E 03    JMP $032E
C054  A9 34 03    LDA #$34
C057  C9 F1       CMP #$F1
C059  F0 07       BEQ $C05E
C05B  6C 2E 03    JMP $032E
C05E  A5 C5       LDA $C5
C060  C9 4C       CMP #$4C
C062  D0 0B       BNE $C06F
C064  A2 70       LDA #$70
C066  8E 04 D4    STA $D404
C069  6C 2E 03    JMP $032E
C06E  8D 01 D4    STA $D401
C06F  A9 7A       LDA #$7A
C071  8D 0A D4    STA $D40A
C07A  6C 2E 03    JMP $032E
```

– Basic loader

```
1 REM        IBM AE+BEIN AAB
2 :
3 REM      IBI BY FRED REID AAB
4
5 REM        AAB LCI 1+B4 AIB
6
7 REM      BBF F1=OK . .F3=OFF AB
8 .
9
10 DATA120,173,20,3,141,46,2,173
20 DATA21,3,141,47,3,169,55,141
30 DATA20,3,169,192,141,21,3,162
40 DATA24,169,0,137,0,212,202,208
50 DATA250,169,3,141,5,212,169,0
60 DATA141,6,212,169,15,141,24,212
70 DATA169,0,141,52,3,88,96,165
80 DATA197,201,4,240,7,201,3,240
90 DATA11,76,88,192,169,255,141,52
100 DATA3,108,46,3,169,0,141,52
110 DATA3,108,46,3,141,52,3,201
120 DATA255,240,3,108,46,3,165,197
130 DATA201,64,208,0,162,32,142,4
140 DATA212,108,46,3,141,1,212,169
150 DATA33,141,4,212,108,46,3,253
200 FORI=0TO119:READA
210 POKE1+49152,A:NEXT1
220 SYS49152
230 NEW:END

READY
```

Print cassette tape covers

by Albert van Aardt

One of the handiest applications I have found for my 64 and the printer is to print covers for my cassette tapes. As I have a few tapes (over a hundred, in fact), I decided to write a program to produce neat covers for them.

It just so happens that the 40x25 line screen is exactly the size of a cassette cover when printed on my Seikosha 100VC (aka Commodore 1526). How's that for unplanned standardisation? Of course, the program can be adapted to format, change and print any screen.

Lines 100 to 300 give the basic lay out - you can change it to suit your own ideas. The POKE3023,125 in line 300 is merely to place a "_|" symbol in the bottom right hand corner, so as to avoid the line feed of PRINTing it.

Lines 10 to 18 are the 'cursor' routine. The current position is PEEKed and the character is stored in C, then a block is POKEd in the same position, followed again by the character. This causes the cursor to flicker.

Lines 22 to 40 check the cursor controls, lines 60 to 80 put the character entered on to the screen. Line 21 checks to see if F1 was pressed; if so, control is passed to subroutine 10000 to print the screen.

I have found it very handy and neat to have all my tapes with uniform covers. If any changes, I simply run the program again and type in the new names.

Just one other thing: no provision has been made for Insert and Delete – you have to re-type the whole line if you made a mistake. This is not as bad as it sounds, because it is, at the most, only 40 characters.

```
1 FORE=0 TO 55:READ A:POKE 832+E,A:NEXT
2 PRINT"{CLR}{DOWN}":GOTO10000
3 GOSUB 10000
10 GET A$
11 F=1024+PEEK(178)+PEEK(179)*256:POKE F,PEEK(F):POKE F+1,1
15 IF A$="" THEN 10
20 A=ASC(A$)
21 IF A=133 THEN GOSUB 10000:GOTO10
22 IF A=145 THEN PRINT"{UP}";:GOTO 40
23 IF A=157 THEN PRINT"{LEFT}";:GOTO 40
24 IF A=29 THEN PRINT"{RIGHT}";:GOTO 40
25 IF A=17 THEN PRINT"{DOWN}";:GOTO 40
26 IF A=20 THEN PRINT"{LEFT} {LEFT}";:GOTO 40
30 IF A<32 OR A>127 THEN 60
40 POKE F,A:POKE F+1,1:GOTO 10
60 IF A<160 AND A>96 THEN A=A-64
70 IF A<96 AND A>64 THEN A=A-32
80 IF A=148 THEN A=A-32
90 PRINT CHR$(A);
100 PRINT "{DOWN}{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
110 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
120 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
125 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
130 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
135 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
140 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
145 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
150 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
155 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
160 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
165 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
170 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
175 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
180 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
185 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
190 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
195 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
200 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
205 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
210 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
215 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
220 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
225 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
230 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
235 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
240 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
245 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
250 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
255 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
260 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
265 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
270 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
275 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
280 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
285 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
290 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
295 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
300 PRINT "{RVS}{CBM-H}{8 CBM-H}{CBM-E}{DOWN}"
305 POKE 3023,125:POKE 3024,5:POKE 3025,5:POKE 3026,5:POKE 3027,5:POKE 3028,5:POKE 3029,5:POKE 3030,5:POKE 3031,5:POKE 3032,5:POKE 3033,5:POKE 3034,5:POKE 3035,5:POKE 3036,5:POKE 3037,5:POKE 3038,5:POKE 3039,5:POKE 3040,5
310 RETURN
10000 OPEN4,4:CMD4:FOR I=1 TO 24:PRINT:NEXT:FOR I=1 TO 40:PRINT"{RVS}{CBM-H}";:NEXT:PRINT
10005 IF A$="" THEN 10040
10010 IF A$="{CLR}" THEN A$="":GOTO 10040
10015 IF A$="{HOME}" THEN A$="":GOTO 10040
10020 A$=A$+"{CBM-H}":GOTO 10040
10040 PRINT A$:PRINT#4,A$:IF A$="" THEN CLOSE4:RETURN
10050 GOTO 10040
```

CHART UPDATE

CBM64 — OCTOBER

1	(–)	Decathlon	Activision
2	(1)	Beach Head	US Gold
3	(3)	Arabian Nights	Interceptor
4	(–)	Micro Olympics	Database
5	(–)	Daley's Decathlon	Ocean
6	(4)	Encounter	Novagen
7	(8)	Loco	Alligata
8	(–)	International Soccer	Commodore
9	(7)	Slogger	Alligata
10	(2)	Valhalla	Legend
11	(11)	Solo Flight	US Gold
12	(14)	Son of Slogger	Alligata
13	(15)	Caverns of Khafka	US Gold
14	(–)	Strip Poker	US Gold
15	(13)	Manic Miner	Soft Projects
16	(5)	Cavelon	Ocean
17	(–)	Trashman	N Generation/DS
18	(–)	Hovver Bovver	Llamasoft
19	(–)	Wimbledon 64	Merlin
20	(–)	Forbidden Forest	US Gold

TOP 3 MANUFACTURERS:

US GOLD
ALLIGATA
ACTIVISION

VIC-20 — OCTOBER

1	(1)	Flight Path 737	Anirog
2	(6)	Vegas Jackpot	Mastertronic
3	(3)	Chariot Race	Microantics
4	(20)	Punch	Mr Micro
5	(–)	Undermine	Mastertronic
6	(–)	Hell Gate	Llamasoft
7	(17)	Sub Hunt	Mastertronic
8	(–)	Max	Anirog
9	(16)	Wiz and Princess	Melbourne
10	(11)	Duck Shoot	Mastertronic
11	(–)	Tower of Evil	Creative Sparks
12	(–)	Computer War	Creative Sparks
13	(2)	Jet Pac	Ultimate
14	(19)	Luv Bug	Thor
15	(8)	Bonzo	Anirog
16	(–)	Matrix	Llamasoft
17	(–)	Minitron	Anirog
18	(4)	Arcadia	Beau-Jolly
19	(5)	Flight 015	Ferranti
20	(9)	Tank Commander	Creative Sparks

TOP 3 MANUFACTURERS:

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ANIROG
CREATIVE SPARKS

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Llamasoft

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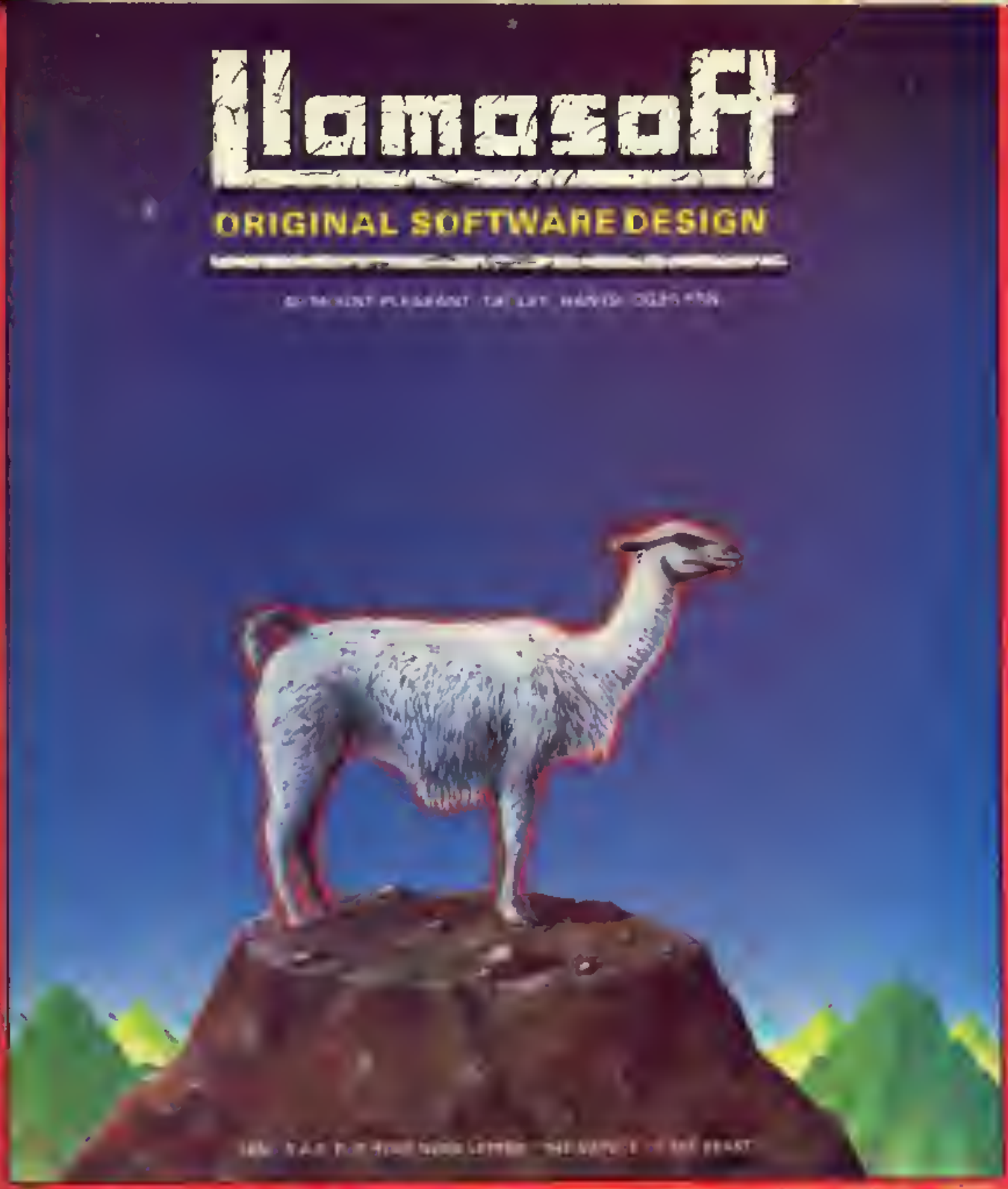

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Database flies on to disk

Micro Magpie reviewed

by Karl Dallas

The Magpie database for the Commodore 64 was originally written as a cartridge-based program, and very powerful it was too. Not cheap of course, but still worth the money – even at just 5p under £100.

Now Magpie's supplier, Audiogenic, has released a version of Magpie on disk. Called Micro Magpie, it costs just £39.95 which makes it probably the best value database on the market. Karl Dallas has been putting it through its paces.

The advantage of cartridges, of course, is speed and if the disk version of Magpie had to constantly access disk the money saving would be more than offset by the loss in convenience. But the program (16K of it) is held entirely in memory and after it has been LOADed (taking about 45 seconds) it is no slower in operation than the cartridge version.

If you're the sort of person who's so anxious to get to work that you can't spare that much time, then it is probably worth £60 to you to get the cartridge but otherwise I can see the disk version of Magpie sweeping all before it.

Despite the "Micro" label which might suggest some kind of diminutive, the new version is actually more powerful than the original, especially in the search parameters.

Basics

Magpie is entirely menu-based, which is great for the beginner, because all the available options are made available to you every time you want to make a choice. You even use menus to employ the 'procedures', or programming language, which allows the user to personalise the way a database is used, and make it even easier for the non technical assistant or secretary to access.

The drawback of menus help-screens and other user-friendly devices, is that as you get into the way they work, you no longer need so much help, and the program becomes rather like a kind of fussy aunt, always at your shoulder being more helpful than you need.

The more sophisticated programs will offer you different levels of help as you progress in experience, so that you can avoid this syndrome but it would be unreasonable to expect a £40 program to be that flexible.

There are a total of 23 menus which are arranged on a tree structure from the opening five-option menu.

In addition to its work as a database, Magpie contains lo res graphing capabilities, either from typed in data or by taking data from files. And it comes with two sample programs a simple mailing list (which for obvious reasons all databases usually take as an example), and a more complex stock control application including the processing of invoices, purchase orders and credit notes.

Setting up

The program is LOADed in the normal way by typing

LOAD"*",8,1

which LOADs and RUNs the loader, and consequently the main program file. A title page is displayed during the LOAD, and the user is asked if a single 1541 disk drive is used. If 'no' the program assumes daisy chained 1541s, allocated device 8 and device 9, though it can access the more powerful (eg 4050, 8050, 8250) business double drives via an Interpod. But the use of IEEE cards in the cartridge slot is advised against, because they use some of the available memory.

Then the user is asked if a serial printer is to be used ('no' assumes a Centronics type parallel printer).

The opening menu offers the following options:

- Run Procedure
- Use Calculator
- Get System
- Create System
- Load and Run

Whatever option is chosen, the new menu pops up (in a different colour) overlaid on the previous menu, so that if 'Create System' is chosen for example, and then 'Edit Form' from the Create System menu, the previous two menus can still be seen.

Menu options are chosen by using the function keys. F1 moves to the top of the menu, F3 to the previous option, F7 to the next option and F5 is delineated the 'go' key. The RETURN key is disabled. I can't understand why they didn't use it, thereby freeing F5 for a different function, but there you are. Apart from the opening menu, the top option is always 'EXIT', which returns you to the previous menu.

Up and running

The calculator facility is not remarkably powerful, performing simple arithmetical (plus, minus, multiplication, division, square root) from left to right on up to 26 variables. Brackets cannot be used to supercede the left-to-right order for calculations. Nor can the variables be assessed from within the rest of the program.

Each record can consist of up to two forms: the first limited to one screen (24 lines of 40 characters, including field names), the second any variant of 66 lines of 80 characters (eg 132 lines of 40 characters). The cartridge Magpie forms were both 66x80 – one of the few places where the Micro version is less powerful than the original.

The second form is also used for reports on the database.

Alphanumeric field data areas are defined by typing in capital letters, for example AAAAAAAAAA or BBBBBBBBBB; and numeric fields (such as telephone numbers) by small letters – aaaaaaaaaa or bbbbbbbbbb.

Maximum record length is 950 characters including field names on the 24x40 form, or 5280 on the 66x80 form. That means you can have up to 26 alpha fields and 26 numerical fields on any record form. Each field can be up to 255 characters long.

So a typical mailing list form might have the following layout:

Name	NNNNNNNNNN
Address	AAAAAAAAAA
	AAAAAAAAAA
Town	TTTTTTTTTT
County	CCCCCCCCCC
Postcode	PPPPPPPPPP
Telephone	tttttttt
Remarks	RRRRRRRRRR
	RRRRRRRRRR

Save and search

Form layouts can be saved to disk and all the existing names can be listed, either to replace them, or avoid accidental over-writing.

Systems can be password protected, though this can create problems, not so much in forgetting passwords (it's a good idea to use something fairly unforgettable, such as your own name) but because it's also possible to get locked out of a system by an 'invalid password' error message when you want to do something new it happened to me.

Searching for records is not as easy as with some other databases. For instance, in Superbase sequential searches on key fields or matches are available from a top of the screen menu but this is only possible because the very powerful 'procedures' language is used.

This takes time to learn, but since the most frequently needed procedures are fully documented, and learning procedures is actually the best way of getting the most out of the system this is a necessary and valuable chore.

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Procedures

A procedure is created from the 'Edit Procedures' option of the 'Create System' menu. The left-hand side of the screen is cleared for the creation of text, and menus are displayed on the right half. First the name of the procedure must by typed in, preceded by a single quote eg **'search**. Sub-procedures (ie subroutines) are named with a double-quote opening, eg **"modify**

Other commands can be menu-selected, even the names of forms to be accessed, which come up from the disk directory on the Select Form/File menu. This is an almost foolproof way of programming, though the exact wording of the commands may seem strange to those raised on Basic, which can result in the following sort of sequence for a yes/no choice

Enter Yes or No
Enter Another?
If no skip

A search procedure is fairly self-explanatory.

Thus it will be seen that in a 17 line program, only two items, the name of the procedure and the prompt, have to be typed in. The rest are generated automatically either directly from menus, or from disk directories scanned from within a menu.

Documentation

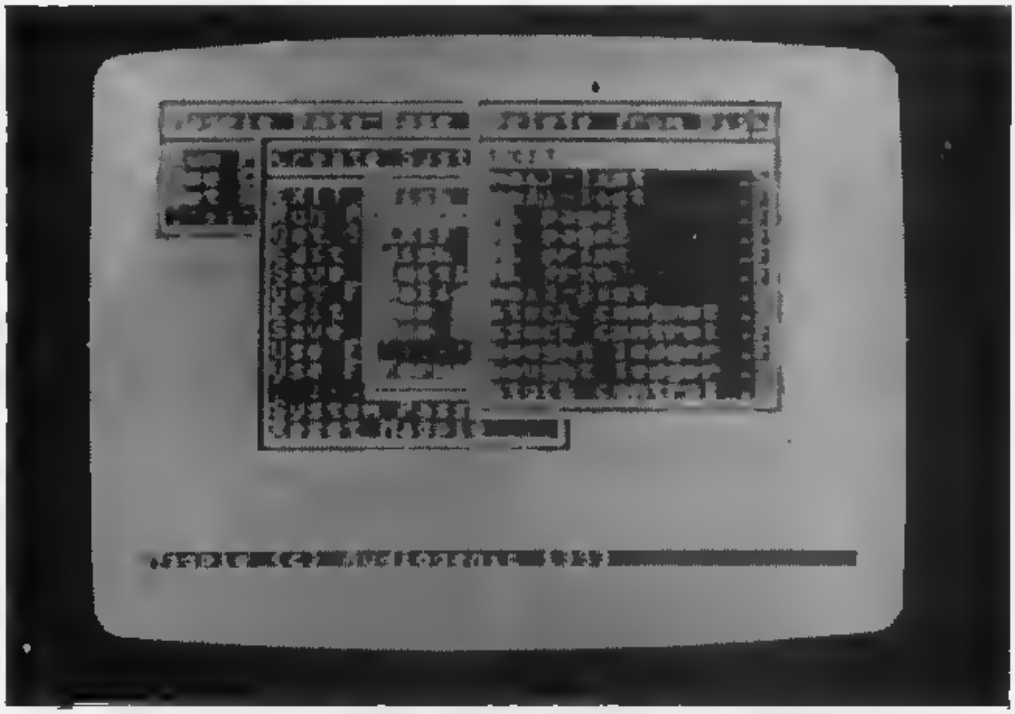
The cartridge Magpie was brilliantly documented, with all the various help screens, menus reprinted in full and presented in a tough ring binder.

Disregarding that well-known maxim, "If it ain't broke, don't fix it", they've rewritten the manual for the disk version, and used it to replace the documentation for the cartridge version, too.

Fortunately, though it's presented in a totally different way, the new manual is good, too. The old one wasn't indexed, a cardinal sin in my book, but I found it fairly easy to get around despite this significant lack.

The new one wasn't printed at review time, and I had to work from some advance proofs, so there may be an index in the finished book. However, I found it harder to get around without one.

The stock control system is more than adequately documented, making it fairly easy for the user to adapt for specific needs.



COMMAND	EXPLANATION
'Search	procedure title
Name & Address D	data file to be used
Search F	form name to be used
enter fields	menu commands for entry of search parameters
begin	menu command to begin search loop
get record	menu command to examine record
match fields	menu command to compare record
if found skip	menu command to skip next commands
next record	menu command to examine next record
if filend skip	menu command for end of file
repeat	menu command to continue search
continue	menu command to continue procedure
Enter Yes or No	menu command for following parameter
Is this the one?	typed-in question
if yes skip	menu command to cease search if found
repeat	menu command to continue search
End of procedure	menu command to end program

Conclusions

I hate to play off one program against another, but it was inevitable that I compare it with *Superbase* despite the (now) disparity in price.

I actually prefer *Superbase*, not so much because its programming capability is more sophisticated (which it is), but because it's easy to use after reading only the first few pages of the manual. If the procedures stump you, then you won't be able to use Magpie.

It's really a case of try before you buy. A database needs more time to choose than a word processor, believe it or not. Allocate at least an afternoon, and visit a shop which has both, and is prepared to give you adequate time to evaluate each.

But, if it's value for money you're after, Magpie has got to be the software bargain of the year.

Under review	Micro Magpie
Description:	Database for Commodore 64
Supplier:	Audiogenic
Address:	39 Suttons Industrial Park London Road Reading, Berks RG6 1AZ
Telephone:	0734 664646
Summary:	Cheap and easy to use for the beginner. But simple activities use complex procedures
Price	£39.95 on disk

Business

More *memory* for business?

A look at the new Commodore 8296

by Karl Dallas

The memory of business computers is getting larger by the day; to the extent that 128K of RAM is now being regarded as the minimum for a 'true' business machine. So Commodore has beefed up the memory capacity of its 8096 range from 96K to 128K and has called the resulting machine the 8296. Apart from that, they look identical.

Overjoyed by the 8296's potential, Karl Dallas went out and bought one, but found that actually using it qualified his initial enthusiasm.

The launch of a 128K version of the 'business Pet', previously limited to 96K in its now discontinued 8096 version, must have been greeted with joy by many who, like me, were pushing hard against the limitations of the 96K memory. And the push was coming from within software houses, too.

Tom Cranstoun of Precision Software, told me, for instance, that he was hoping to be able to rewrite Precision's excellent Superoffice so that it was able to switch merrily between word processing, database and spelling checker without any reLOADing. (The present version offers you word processing plus a database, or wp plus spelling checker, and to get from the latter to the former you have to quit the program and reLOAD.)

He has decided not to, for the simple reson that the 'extra' 32K is virtually inaccessible to anyone but a hacker prepared to fit jumper wires all over the innards of his pretty new machine. I doubt that many business users are included in that description.

Let me quote what Tom tells me: "The extra 32K of RAM 'hides' behind the Basic/kernal area and is controlled by the user port. However, writing to the user port could cause the machine to lose its Basic or kernal inadvertently. Therefore the machine as shipped will not allow the use of the extra 32K RAM.

"A deliberate act on the part of the user will allow the RAM to function: a number of links inside the machine have to be made by wire, or better still by a DIP switch.

"These links allow 32K RAM-switching in 4K blocks, and can specify a 'power on' condition for slots '9' and 'A'. These slots are normally empty, but can be fitted with utility/security ROMs. Power-on can be set to use the RAM in this area, giving the user the option to softLOAD ROMs."

A call to Commodore at their new Corby technical enquiries number (0536 205252) confirmed that Tom knew what he was talking about. "It will, however, run all 8096 software with no trouble," said the lady in Corby. And that, according to Commodore's Gail Wellington, was the major consideration. The new machine had to be able to run the wealth of existing 8096 software. (Despite that, it is rumoured that Handic is adapting Calc Result to take advantage of the increased capacity.)

Now, we computer writers lead a fairly charmed life, getting access to expensive machines and software free of charge, and so one could normally print a large warning, *caveat emptor*, in whatever medium one had access to, and pass on to the next subject with a laugh of gay abandon.

If you detect a rather different tone to what I've written so far, it's because, attracted by the possibilities of 128K to power my business, I actually went and bought one of these '128K' machines. And though I got a hefty journalist discount, I still feel rather sore about it.

Pros and cons

However, the good news is that the 8296 does perform exactly like the old 8096 and the new Porsche-styled look, originally created for the now discontinued 700, with detachable keyboard and a really nice key action, results in a very classy piece of equipment.

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Under review	**CBM 8296**
Description:	**128K micro computer**
Supplier:	**Commodore**
Summary:	**Attractive, friendly version of the popular 8096 business machine, but with 32K extra memory that's tough to get at**
Price:	**£914.24**

If you team it, as I did, with the new low profile 8250 disk drives, which give you faster access times and double-sided disks (and therefore twice as much data per disk), work becomes rather like driving a powerful sports car that raises eyebrows wherever you pass

A warning, incidentally, about the drives They are less efficiently ventilated than the old square versions, and I found that piling papers on top - I know we shouldn't, but I expect everybody does - caused the drives to hang up until I turned off the disks and let them cool down.

This raises in my mind a possible problem about the 8296D, the version with integral disk drives I tried to get hold of a review sample, to see how well it performed during extended use, because I'd have thought the drives would overheat much more when sandwiched between the neatly laid-out CPU and the VDU, but since I'm still waiting, I can't say.

(And Commodore has just announced that it is giving away £865 worth of software with the 8296D That lot amounts to three applications packages the SuperScript word processor complete with spelling checker, The Manager database and file management package, and Handicalc Calc Result spreadsheet Commodore dealers are selling the lot for £1,690 excluding VAT)

Documentation

The documentation is really bad even by Commodore's standards. The 8096 was supplied with an 8032 manual plus duplicated supplement; this new one also comes with an 8032 manual (illustrated by the old tin-box shaped machine, in which the way of getting into it and the chip layout is different, the Porsche body hinges at the back, instead of the front) plus the 8096 supplement plus an 8296 supplement

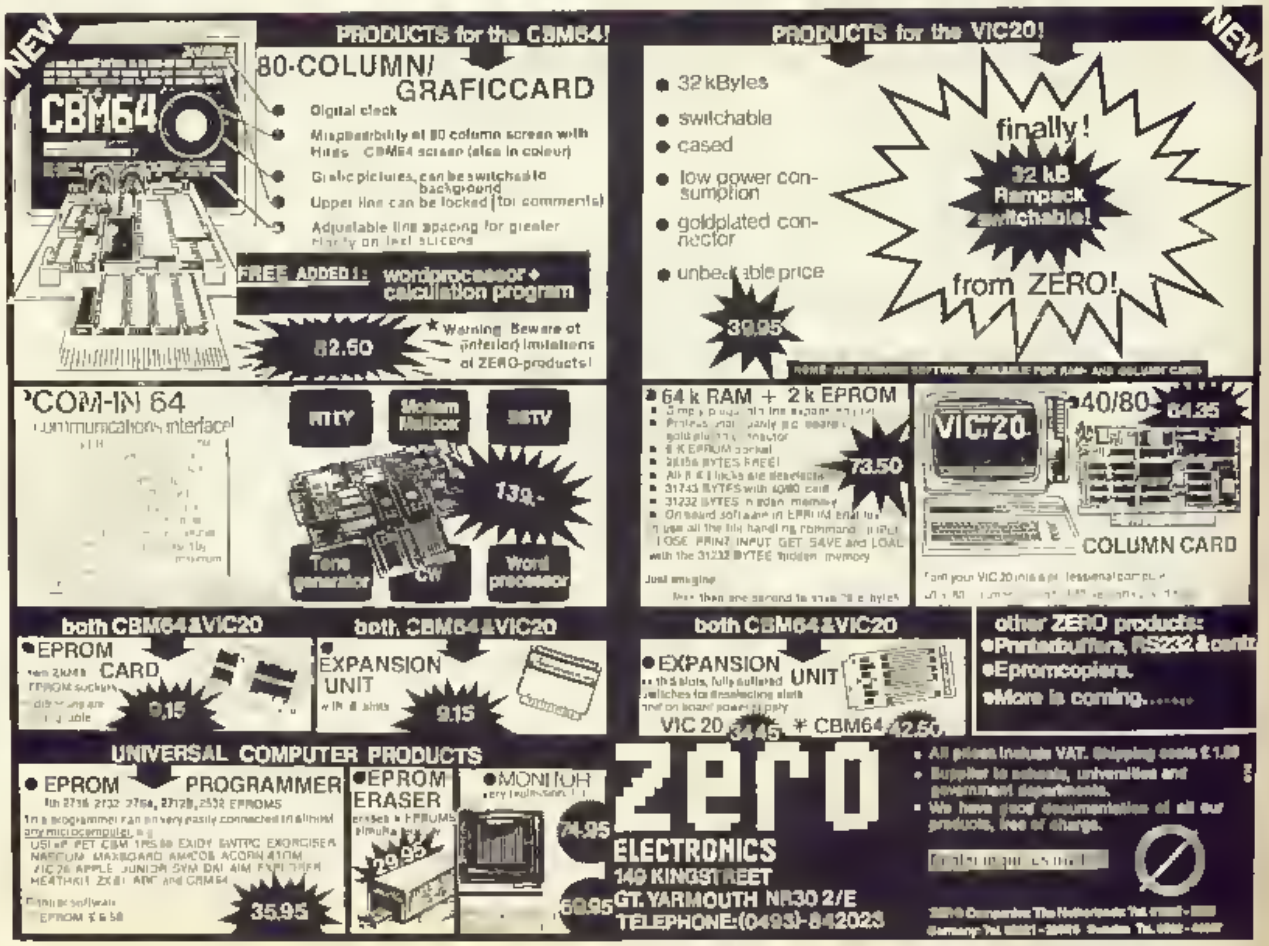
This makes one wonder if Irving Gould is really serious about wanting to service 'all classes' with Commodore kit, or whether he's decided that only 16-bit architecture (*a la* the forthcoming badge-engineered Hyperion) or Unix (as in the promised Z8000 machine) will satisfy the business market, and he's not really bothering until they're available

If that's what he thinks, then in my humble submission, he's wrong I've actually got a Hyperion, and it's a sweet machine in its own way, but I'm writing this on my 8296, despite the fact that the 16-bit machine has 2½ times the available memory

Conclusion

I like working on the 8296, and even if it doesn't have more memory than my old Pet-shaped 8096, it's still a nicer machine to use, with its detachable keyboard and tilt-and-swivel VDU. At the price I paid, I suppose I shouldn't really complain.

But if I'd paid nearly a grand for an 'upgrade' that wasn't, I might feel somewhat aggrieved.



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So you think you

How to complain about duff products

by Charles Christian

As far as the laws of the land are concerned, anyone who buys and uses a computer for a hobby or out of educational interest is lumped together in a general category of people known as 'consumers'.

Now, it can lead to desperate problems when a business computer system goes down, leaving a company "in the lurch" as regards its data processing requirements. But it can be just as annoying for an enthusiast to discover that the computer system he or she has spent a lot of money on will not work. Indeed, the blow to someone who has painfully saved up enough money out of a meagre pocket-money allowance to buy something like a 64 may be considerably harder to bear than for a well-heeled businessman who has perhaps paid many thousands of pounds more on a system.

Fortunately, though, consumers do have rights – rights which frequently are far more generous than those enjoyed by businessmen making non-consumer purchases. But do you actually know what these rights are?

Commonsense might suggest that if your computer system does not work, all you have to do is take it back to the supplier you originally bought it from and demand your money back. But is life and the law really as straightforward as that. Read on, and you'll find out. .

The starting point with this subject has to be the 'contract' for the sale of goods between you and the trader who supplies you with them.

You may have read about long, complicated legal documents spelling out lots of elaborate "terms and conditions". In fact these are totally unnecessary for consumer transactions – word of mouth is good enough. To be precise the moment you offer to buy, say, a light pen and the trader accepts your money, you have all the factors present that are necessary to create a legally binding contract.

It therefore follows that if the trader takes your money and then fails to come up with the goods the trader is legally in the wrong. He is acting "in breach of contract". And unless some form of settlement can be agreed, ultimately you will be entitled to sue for financial compensation – known as 'damages" – in a court of law.

Almost a fact of life you'll find that (legal necessity or not) most traders – especially when you're buying hardware – will issue you with a formidable set of terms and conditions in writing. Such things are known as "express" terms.

Regardless of what they may or may not claim, such terms are not legally binding – unless they are brought to your attention *before* the contractual transaction is completed.

Implications

Further, even if you are aware of the terms, the trader is still not permitted to deprive you of any of your "statutory rights". Without getting too bogged down in the legal minutiae, the most important statutory rights are a set of three 'implied' contractual terms spelled out in the 1979 Sale of Goods Act.

These implied terms are in effect promises made by the trader to you about the quality of the goods you are buying. So no matter what may be down on paper, any court of law that considers your case will automatically read these implied terms into the contract – thereby crediting them with as much importance as if they had been formally spelled out in writing.

In a nutshell the three implied terms are:

- **that the goods are fit for their "usual use".** In other words if you buy a cassette deck for a Vic or a 64 you are entitled to assume that it will actually run software programs. On the other hand, you cannot complain if your floppy disks start to suffer when you treat them as table mats, in no way can you be said to be using them for their "usual use".
- **that the goods are of a proper "merchantable quality".** If you

I know your rights?

buy something as "new" it should be in perfect condition and not shop soiled. Similarly, if you get an electric shock off the equipment, there is obviously something wrong with it – entitling you to complain that the item is not of "merchantable quality".

- **that the goods are "as described".** Thus a stock control program specifically described as catering for 1,000 different categories of goods should be capable of holding 1,000 categories. Otherwise the program is not "as described" and the trader is once more in the wrong.

Although wrapped up in legal terminology, these implied promises cover the three most frequently encountered problems likely to face a Commodore user – "the thing doesn't work properly"; "the thing is of poor quality", and "although there is nothing wrong with it, the thing is not what I asked for".

Fortunately, the courts do not expect you to learn the law in great detail. And, as long as the facts in your case broadly fit in with these principles you are in the clear.

And on to practical matters

Having dealt with the theoretical background to consumer goods law the next matter to consider is the practicalities of defending your rights when something does go wrong.

Mention has been made of suing people in court but in fact litigation should always be seen as the final step, only to be taken after all other approaches have failed to be of any use.

So faced with, say, a defective gadget to plug into the back of your CBM computer, just what steps should you take?

- **against the trader:** the first thing to do is complain, as many traders will quite happily come to terms if a reasoned (as opposed to an hysterical or abusive) complaint is made of them. Always make your complaint without delay and don't give up easily. If necessary send a written complaint to the trader. And if you still get no satisfaction, write to the trader's head office, their suppliers or to Commodore itself - most of them will be keen to ensure that only reputable companies are involved with their products.

Assuming the trader accepts responsibility, what can you expect?

The trader may offer you a *free repair*. Although there should be no real reason why you shouldn't accept such an offer, bear in mind that you are under no legal obligation to do so.

Likewise a trader may offer to exchange the *goods*. Once more, you may accept a replacement; and it is probably the most convenient thing to do. But again you are under no legal obligation to do so.

What you are actually entitled to in law is "damages" - in other words, cash compensation for any loss the purchase of the defective item may have cost you. Thus, for example, if the gadget is so defective that it causes your main processor to blow up in your face you can also claim the cost of replacing or repairing that.

Alternatively you are entitled to get your purchase *money* refunded – which is possibly the most frequently sought after remedy.

But the main rule is – act swiftly. If you wait six months before claiming the law may deem you to have "accepted" the goods; which means that your legal rights are considerably curtailed. The legal rationale is that the longer you have something, the more likely it is that any faults it contains are due to natural "wear and tear" rather than to some inherent fault.

Finally, before leaving the subject of remedies altogether, watch out for a trader offering you a "credit note". When you are entitled to a full refund you can *insist* on it being in cash.

Court in the Act

Assuming you can reach a settlement with the trader, all your problems are over. If not, you are going to have to resort to litigation.

Bearing in mind the average cost of Commodore systems, it will usually be possible to pursue this by bringing what's called "ordinary action" in a County Court. The upper ceiling on claims of this sort is £5,000, after that cases have to be dealt with in the High Court.

And where the claim involves no more than £500, there are in addition two legal rules which make life a lot easier for any do-it-yourself lawyers. To begin with, for small claims of this sort both sides have to bear their own legal costs - so even if you lose, you will not be landed with a big bill to pay for the trader's lawyers. And secondly, these small claims are dealt with in informal "arbitration" hearings; those are far less daunting for the amateur than a full-blown trial before a judge.

Before getting around to litigation, you may well find that the trader in question has done a bunk – this can often be a problem with mail-order suppliers. Or alternatively, may be in dire financial straits - lawyers describe such people as being "men of straw" – so as to not make it worthwhile to sue them. Fortunately three alternatives exist.

- **Against the manufacturer:** In the course of normal events, because your contract is with the trader he is the only person you can sue for breach of contract. If the trader was merely acting in a dealership capacity, though, he was selling products on the retail market which have been manufactured by someone else and in certain circumstances it may be possible to seek compensation from, or even sue, the manufacturer directly.

This can arise where the manufacturer supplies a 'guarantee' or 'warranty' with the product, as this is construed in law as being a separate contract – this time between you and the manufacturer direct, thereby cutting out the middleman. Bearing in mind that a company like Commodore is most certainly not a "man of straw" it may often be more worthwhile if you have a guarantee, to go straight for the manufacturer.

- **Against a magazine:** Whilst a company like Commodore may be sound enough, smaller gadget manufacturers and software houses have an annoying tendency for being unstable. Mail-order suppliers are the most unreliable, and in many instances if your dispute is with someone of this sort you may have to reconcile yourself to a complete write-off.

On the other hand, it may turn out that the magazine or newspaper that carried the mail-order advertisement runs a compensation scheme for readers. These are purely voluntary affairs – indeed they can best be regarded as public relations exercises – but the basic principle is that anyone who has sent money to an advertiser who subsequently defaults can claim compensation from the publisher.

- **Against the credit supplier:** Finally, if the item that is the centre of the dispute was bought with the assistance of a credit card like Access or Barclaycard, you will be relieved to know that under Section 75 of the Consumer Credit Act 1974, the "credit supplier" may also be liable for the goods.

So instead of pursuing an action against a possibly insolvent trader, you have the option of suing a well-heeled bank for compensation.

Surprisingly few people seem to be aware of this very powerful provision. It's worth bearing in mind however that the credit supplier is *only* liable if the cash price of the goods was between £30 and £10,000. The upper limit should cause few problems but the lower one will mean that the suppliers of some of the smaller CBM-type accessories and ROM or cassette-based software will probably fall outside the scope of Section 75 measures.

Last words?

Faced with the defective product, most consumers' first reaction is either to be upset or to have a stand-up row with the manager of the shop where it was originally bought.

In fact there is no reason to panic.

You do have legal rights – plenty of them. And, not only are there a number of different approaches you can adopt, but you can pursue them against a number of different people. The secret is to tackle each one in turn in the methodical way until finally you reach the point of commencing legal action as a last resort.

So, if the thing won't work – don't be a wimp: go and do something about it!

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BOOK LOOK

The Anatomy of the 1541 Disk Drive

The 1541 is one of the least understood of the Commodore peripherals a lousy manual, dotted with mistakes and omissions, leaves people under-utilising what can be a flexible add-on. Many people are content only to LOAD and SAVE programs and sequential files, little realising the power available through use of relative files, and the direct access commands.

Well, the good news is that all these, and more, are dealt with adequately in an easily-understood style in this book from Abacus. As well as explaining the ordinary DOS commands the book goes on to explain relative files, the direct access commands and the internal structure of a 1541 diskette – the block availability map, the directory, and so on.

Many useful utility programs are given. These programs are an education in themselves, demonstrating many of the commands dealt with. The Disk Monitor program in particular is excellent – it allows easy editing of individual disk sectors, useful for patching up messed disks.

The authors even document the 1541 TEST-DEMO disk programs, including the DOS wedge, giving the instructions for use that Commodore forgot...

For the really keen, the authors also give a fully commented disassembly of the DOS 2.6 ROM, discovering a new command in the process.

This book I recommend to anyone who has got lost in the 1541 user's manual, or those of you who want to utilise your disk drive to the full.

The Anatomy of the Commodore 64

This book has never strayed more than a few feet away from my 64 since I got hold of it. It really is a goldmine, aimed particularly at the Machine Code programmer, and it's full of useful routines.

Half the book is occupied by a disassembly of the Basic and Kernal ROM. The disassembly is very well documented, and switches between hex, ASCII and disassembly as appropriate for jump tables, command word lists and programs. It is easily the best disassembly for the 64 I have seen, so good that I would have bought the book for it alone.

However, this book has more to offer. The first chapter deals with machine code programming on the 64, giving many useful tables of ROM calls, and devoting a lot of time to I/O from machine language. Other chapters deal with the advantages of assembly language as opposed to pure machine-code programming, the 64's hardware and memory configurations, and the workings of the Basic interpreter, including how to expand Basic – with working examples.

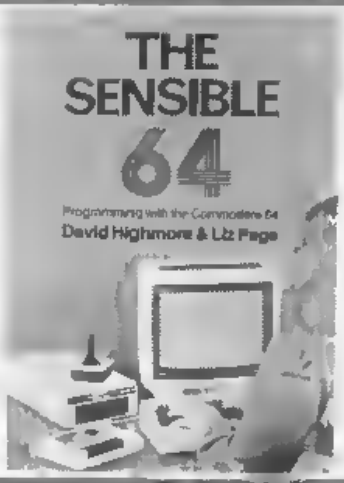
Three chips dealt with in individual chapters are the SID (mainly sound), the VIC (graphics) and CIA (I/O).

Thankfully, there is very little material in this book which is likely to be in half the books on your bookshelf – such as the standard appendices packed with all too familiar tables and diagrams.

It's a pity this book is so expensive, but it costs just as much to buy in the USA. Even taking the price into consideration, I strongly recommend this book to anyone who wants a good 'anatomy' book for the 64.

BOOK

The Sensible 64



The Book:	The Sensible 64
The Authors:	David Highmore and Liz Page
The Publisher:	Microbooks
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The Reviewer:	Ken Ryder
The Conclusion:	Useful hints and tips but overpriced

BOOK

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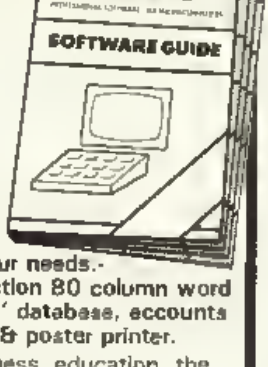

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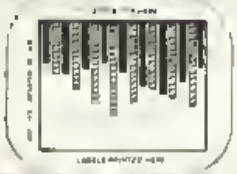

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TOMMY'S TIPS

Tommy is Commodore User's resident know-all. Each month he burrows through a mountain of readers' mail and emerges with a handful of choice queries. The result, before you, is a wadge of priceless information and indispensable advice. There's even the odd useful tip as well.

Dear Tommy, I have had my Vic-20 computer for four months now, and I seem to have a problem and was wondering if you could help me.

A couple of days ago I bought two books to help me use my Vic. It is when I try to program the games listings into my Vic, that my problems occur, and it happens with any long program.

What happens is that when I have reached the end of the program and listed it there are lines missing. It seems as though the computer will not accept the lines

When I was trying to program a game in, I had got halfway through it when I got an UNDEF'D STATEMENT ERROR message, and I hadn't even finished programming let alone typed RUN or LIST. And when I tried to type in two lines, one line never came up in the listing no matter how many times I typed it in and the other gave a SYNTAX ERROR message even though it was the same as the line given in the book. I am writing to you because I don't know who else to turn to.

I assume that the programs you are attempting to put in are not just too large, but assuming they are all ones which should fit into the available memory then it sounds very much as though you have a faulty RAM chip in the computer. Do you sometimes have trouble with the Vic not powering-up correctly (you get garbage on the screen)? If so, this is almost certainly a faulty chip. There is a way you can test this; enter the following program and run it (do not put in any of the spaces except inside quotes). It will tell you if any RAM address is not functioning correctly. You may have to run it several times since faulty RAMs can be very intermittent, sometimes working correctly and then failing for no apparent reason. If your computer fails the test even once then take it back to your dealer for repair.

```
10  PRINT"[CLR]"
20  FOR A=4253 TO 7679
30  X=PEEK(A):PRINT A;
    "[CUR UP]"
40  POKE A,0
50  IF PEEK(A) <> THEN
    GOSUB 100: GOTO 80
60  POKE A,255
70  IF PEEK(A) <> 255 THEN
    GOSUB 100
80  POKE A,X: PRINT"[CUR
    UP]": NEXT A
90  END
100 PRINT" FAILED": RETURN
```

If you have any memory expansion then you should alter the loop values in line 20 as follows:

+3K – change first value to 1182.
+8K – change first value to 4768 & second value to 16383
+16K – change first value to 4768 & second value to 24575
+24K – change first value to 4768 & second value to 32767

(The reason the test does not start at the very beginning of the Basic area is that you must not disturb the program itself which occupies 157 bytes)

Dear Tommy, My problem is mixing graphics on the Vic-20. It is easy enough to just print or use POKE commands to get one of the graphics on the keyboard, but I would like to get complicated graphics, like those on games that you buy. I have a switchable 16K expansion.

I would also like you to recommend a good programming book for a Vic-20 with 16K expansion (switchable) suitable for a 10-13 year old.

What you have to do is to design your own characters on an 8x8 grid and then tell the computer to use your character set instead of the normal one. To start with, you need to transfer the existing character set into RAM so that you can play around with it; this also ensures that you don't get garbage on the screen when you swap between the two. This is done as follows:

```
10 POKE 52,28: POKE 56,28:
   CLR
20 FOR A=7168 TO 7679: POKE
   A,PEEK(25600+A):NEXT
70 POKE 36869,255
80 END
```

You can now replace any of the characters with the design of your choice. The characters are made up of 8 rows of 8 dots; each character is therefore stored as eight bytes in memory. By actually drawing your character on paper and filling in the squares to make the design, you can work out the value to be put into each byte since a filled square equals 1 and an empty square equals 0, the resulting 1s and 0s make up a binary number, for example **00111100 = 60**, this is the value you would need to POKE into the relevant memory location. All 8 rows are totalled in the same way, giving you your new character. A small program will illustrate it much better:

```
30  FOR A=1 TO 3
40  READ CH: FOR C=CH TO
    CH+7
50  READ V: POKE C,V
60  NEXT C,A
75  PRINT"[CLR]"; TAB(96);
    "JET"; TAB(88)
100 DATA 7248, 0, 0, 1, 30, 63,
    31, 3, 1, 7
110 DATA 7208, 0, 248, 38, 32,
    255, 255, 248, 240
120 DATA 7288, 2, 6, 14, 255,
    255, 248, 0, 0
```

Run this with the first part; a small jet fighter will appear on the screen. By expanding the data statements in groups of eight, you will see how the characters are made up (the first value is the start address of the relevant character); you can then follow the same method to design whatever you like. One restriction with using your own character set is that you can only move it to the RAM which is permanently in the machine (in not any expansion area). This causes slight problems when using more than 8K expansion, but has no effect when using 3K extra since you can still reserve space at the top of memory. To regain the normal character set type **POKE 36869,240**

On your second query I am not sure whether you want a book to tell you how to program on the Vic or one to learn Basic programming in general. If the former then **Vic-20 User Guide** by John Heilborn and Ran Talbot is as good as any and if it is a Basic tutor you are after then you are rather spoilt for choice, **Illustrating Basic** by D Alcock costs £3.25 and is a good book although not for any particular machine. Commodore have a couple of good learning packages: **Gortek and the Microchips** (£12.99) and **Introduction to Basic (Parts 1 and 2)** (£14.95 each), while Honeyfold have the excellent **Dr Watson** Basic course, but there are a number of others equally suitable.

Dear Tommy, My father has bought the Commodore 64 Disk Drive and has given it to me to write people's names and addresses for his job – to store them on disk. I would like to know how I could print it out on the screen so the disk will save it, I would be very grateful if you could tell how you would do it.

I think I detect a little confusion here between printing on the screen and storing the data on the disk: what you need is a program which will store each name and address in a record which is then stored in a file on the disk. I suggest you purchase one of the many database programs which are designed for this very purpose.

These programs will allow you to input the information, sort it into alphabetical order, display it on the screen, print it on a printer and finally store it on a disk or cassette. Make sure you check how many records you are going to need as some of the cheaper databases are limited in the number of records per file. There is of course no limit on the number of different files you can have so this may not be a big drawback. The best method is to ask for a demonstration before you buy, so you would be better off going to a dealer rather than getting it by mail-order if at all possible.

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Letters

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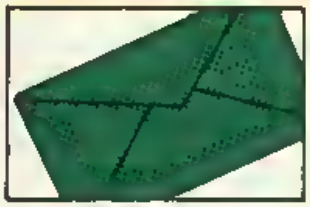


Teacher's Pet

I am head of Computer Science in a Comprehensive School that had, as other schools and colleges taken advantage of the Department of Industry scheme and purchased an RML 380Z. The intention was to equip a Computer Centre with these machines or the slightly cheaper 480Z. However, money became tight (due to Local Education Authority cut backs and also the 'flavour of the month' changed to technology) and we were as a one-off concession, given £800 to purchase micros. This allocation would not even buy ONE more 380Z let alone 10 which was my brief! As you will no doubt be aware the other (cheaper) machine sponsored by the DoI is the Spectrum. Having looked at the Spectrum and considered it carefully I decided that it was insufficiently robust for general use. Given the environment of even a well supervised classroom the keyboard, let alone the case, would be under constant threat of damage.

I cast around for a machine that was robust, cheap, could be expanded at a later date and had come from a good stable. I am sure it will not be any surprise that I opted for the Vic-20 and, having contacted a supplier, was able to negotiate a good deal on the quantity order. The school is now equipped with eight Vic-20s, a Commodore 64 (with disk, printer plotter, graphics tablet etc.) and, of course, the ubiquitous RML.

All the above is largely irrelevant except that it sets the scene. The Computer Centre provides 'micro power' to a large number of 'serious' users. By serious I mean people who only play video games occasionally and then are very discerning over the ones they pick. The School Library is now in a position to take a periodical of interest to computer users in the school and obviously they asked my advice. I spent three months buying ALL the magazines I could lay my hands on – from your better known rivals to the more obscure and esoteric publications. And now to my point, of all the magazines I bought in that three month period Commodore User was the only magazine that impressed me at all!

Yours was the only magazine not to be filled with listings of pathetic programs attempting to emulate ridiculous, and all very similar, arcade games. I do not object to those people who wish to spend hundreds of pounds on sophisticated equipment merely to play Ravenous Robin or the like. Nor do I object to software manufacturers making money selling overpriced, and very similar, games to them. I do not object when people who play these games refer to themselves as programmers nor when they publish magazines in order that they can tell each other how wonderful the wretched games are. I DO object when publications claiming to be respectable journals are filled with this rubbish. Having made a study of the available literature I am able to say that 99% of it is as described above.

I have taken an unprecedented step in writing to congratulate you on your own publication. The July issue was a masterpiece. The UNICOPY64 program published (without error – a rare event in other literature) was probably the most useful routine published in any magazine for some years. Jim Butterfield is a great asset to your staff and should be retained at all costs. He has kept his high standard again in August with TINYMON for the Vic-20. I, and the rest of the Centre's Users, are grateful that at least one author and one publisher are actually interested in serious computing and are providing other people with the means to use their computers creatively.

I have a number of editions of Commodore User open on the desk as I type and the list of useful, informative, accurate and well written articles, program listings and 'shorts' is quite remarkable. You set the standard by which I shall judge all other publications. Let me say at once that whilst there are, at the minute, none to touch you, you must guard your growing reputation jealously – I was a little disappointed that John Rampling's, otherwise excellent, article "Using the 64's Function Keys" was published without its accompanying Basic listing. However mistakes will happen and I have no doubt that this is a mere temporary aberration. I will make no further reference to it!

Having written this unsolicited testimonial to you I need not add that my unqualified recommendation to the Library will be to take out an immediate and lengthy subscription to Commodore User. Once more my congratulations and our thanks.

A Freedman, 99 King Georges Ave, West Watford, Herts WD1 7QE.

The other side...

I am rapidly becoming your number one fan and maybe even quicker than that.

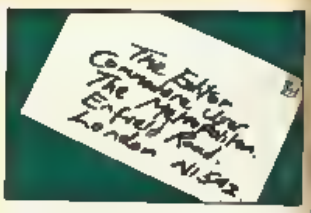
With the help of Butterfield and the boys and excellent ops from other readers I am understanding many things most puzzling. To thank all those would take for ever so please pass this tip to them with my gratitude. Disk Drive Owners Delight

1 Take two new disks
2 Place back to back
3 Take Stanley knife or similar sharp object
4 Insert sharp object in write protect notch and make neat incision in bottom of disk
5 Repeat 4 until a neat square removed
6 Place disk in drive and format both sides

Why disk manufacturers don't do it without charging wicked prices I don't know. It does not work well on old well-used disks, so don't waste time.

Again my thanks for a great mag.

G Elliot, 118 Church Parade, Canvey Island, Essex.



You're quite right, it is possible to format and use the other side of a single-sided disk. But be warned: single-sided disks are usually verified only on one side. And they're probably sold as single-sided disks because they failed the double sided test.

Inky fingers

I was interested to read in the review of the MPS-801 printer (July issue) that the ribbon on this machine has an easily replaced ink pad. I have a 1515 CBM printer and when the ribbon recently refused to make any further impression I was encouraged to experiment and I discovered that the lids on the little boxes at each end of the ribbon can be easily prised off with the blade of a knife.

The right hand box is of no great interest as it contains merely some sort of tensioning device. The left hand box, however, holds the ink pad in the form of a foam rubber wheel. This is easily removed, soaked in stamp pad ink, and replaced. Maybe the ink I have is not the best for the job. At all events it is cheaper to apply some fresh ink than to pay £6.50 for a new ribbon!

R.G. Holmes, Dalilea, Glen Road, Peebles EH45 9AY.

Fingers do the walking

I am writing to you to tell you just how effective your 'classified' ads are. I had put adverts in many other magazines and had no response and had therefore wasted money on the adverts. Even now I am still receiving offers for my Vic-20 and they all say it was from your magazine that they saw my advert.

The reason why I sold my Vic was so that I could update my hardware to a Commodore 64. I think however that Commodore, like Sinclair, could have offered a trade-in deal, ie people who have Vic-20s and wanted CBM64s could send their Vic-20s in exchange for a 64. Thus not having to pay £200 for a 64. This way the owner of a Vic could buy a 64 at half price and at least get a trade-in on his/her old machine.

S Matthews, 25 Whitehall Road, Didsbury, Manchester.

Old Vic

I am writing to complain about your August edition.

I bought the magazine and read through it and wondered whether you had changed your name, like to CBM 64 User. I didn't find one feature (apart from the usual, eg games reviews, but not all of us like games) dedicated to the Vic-20 whereas the CBM 64 had two.

Also can't you find any Vic-20 books to review? As for your joint features eg All the Fun of the Show it was virtually all dedicated to the CBM 64.

I know the Vic-20 is supposed to be dying, but all you're doing is putting the nail in the coffin, so please, please can you increase your Vic-20 articles, and keep it that way.

Finally, isn't your magazine shrinking? (losing pages – July issue 110 pages, August 68 pages).

Apart from the August issue, it's a good fair mag.

Gary Ward, 15 Court Crescent, Kingswinford, West Midlands.

Clubbing it Down Under

I wish to let you know details of our Commodore 64 Users group, recently formed here in Lismore, for publication in Commodore User.

Name of Group:
Lismore C-64 Users Group,
c/o John Grimmond,
Richmond Hill Rd,
Wollongbar,
Via Lismore, 2480,
N.S.W.
Australia.

I am very pleased to be able to buy this excellent Commodore computer magazine each month. It is one of the best magazines on Commodore Computers I have seen. I have both the C-64 and Vic 20 computers and find your articles and features very helpful and informative, especially the program listings. I sincerely hope that you and your magazine improve over the years to come and I will certainly keep buying it each month.

Congratulations on a wonderful publication.

Bruce Greig, PO Box 385, Lismore 2480, New South Wales, Australia.

Back-up problems

I have read with interest letters in Commodore User in which readers complain about their dealings with Commodore. Perhaps my own experience will be of interest.

In January after three months of correspondence, I obtained Easy Stock. I am using that to control the parts inventory in my garden machinery repair business. The system works well, but as I find the single drive back-up program very cumbersome, I asked Commodore whether I could use two 1541 drives to automate the process.

They confirmed that this could be done by using two 1541 drives and the Copy-all utility that comes free on the 1541 Test/Demo disk.

I purchased the second drive, changed the device number to 9 (hard-wired) and attempted to make back-up copies of the Easy Stock data disk. No go.

Then followed protracted correspondence with Commodore in which they again confirmed it could be done and sent me various instructions for the use of Copy-all.

Finally, in response to a phone call from a local dealer, they admitted that Copy all cannot copy Easy Stock data disks. Something to do with the way data is arranged on the disk - way above me. I'm no computer buff, I'm just a user.

From my dealings by letter and phone, I feel that Commodore treat their customers with discourtesy and contempt. Letters, including recorded delivery letters go unanswered. When they are answered, it is often after a three to five week delay.

From conversations with other users and with my local Commodore dealer, I conclude that these are not isolated incidents. It appears that Commodore are swamped by the scale of business and are unable to cope with the trade they have generated.

However, if any of your experts can help with this back up problem, I would be grateful. Otherwise, who wants a cheap 1541?

Angus Shapland, The Quillet's Garth, Appledore, Ashford, Kent.

Anybody out there like to lend a hand in solving this reader's problem?

CLASS

Vic-20 £40.00: C2N (Vic 64) £25 00 Vixen 16K switchable RAMpack (guaranteed) £25 00 30 software titles includes top games, utilities, educational £2 00 each Books (offers) accept reasonable offers on single items or the lot Tel Coventry (0203) 306449

Holland CBM-64 owner wants to exchange programs (disk) and tips with UK 64 owners Many prg's available Please contact Marnix D Tellings 4 Ebstroom, 3224 CD Hellevoetsluis Holland

Vic-20 plus Programmers' Aid, 16K RAM Stack motherboard, Stack rifle, Intro to Basic 1&2 £80+ software – Wacky Waiters & Flight Path 737 £30+ of books including Your Computer & Commodore User All in good condition 1½ years old Price £160 ono Paul Bateman, 154 Morley Street, Goole North Humberside Tel (0405) 4313

16 yr old CBM64 user boys/girls any age – please write to Ln, 18 Pitchford Rd, Heath Farm Shrewsbury, Shropshire

64 girl penpal wanted Must be 15 upwards Swap tips on computer I am a boy, 16 years Meetings? Dean Godden The Coppice, Belper Derby

CBM64 owner with disk drive would like to correspond with female 64 owners with view to friendship & exchange programs Sean Murphy, 35 Baile Rd East Dublin 12, Ireland

Attention Vic-20 owner seeks penpal aged about 15 (male or female) to swap games, ideas etc Replies to Paul Nolan, Westpark, Middleton County Cork, Eire All replies answered

Commodore 64, C2N cassette unit, only £200 Unwanted gift Free joystick Phone Amar (01) 574 8583 or (01) 571 3051 Also 1525 printer £200 plus printer paper and labels and free wordwizard program

CBM64 – Vic-20 Hardware Utility Load from C2N cassette and copy at same time to second recorder Plus system reset button, £7 00 inc or sae details A Denby, 6 Ropewalk, Alcester Works B49 5DD

LOGO (Turtle Graphics) For Vic 20 plus Super Expander Tape plus full manual £7 00 Pay I M George, 3 Alexander Close, Hayes, Kent BR2 7LW

Calling Vic-20 owners I need a male or female pen pal aged 13-16 to swap games and tips Write to Eric Young, 62 Husband Rd, Forest Hill, Victoria, Australia 3131

Graphix 64, over twenty commands enables you to plot/erase points, draw lines and fill/erase areas on screen (as advertised in Vicsoft magazine) Used only twice Bargain at £8 50 Tim Bak, 117 Kingsway, Braunstone Leicester LE3 2PL

Commodore 64, C2N cassette recorder, joystick, paddles plus computer dust cover Five games including Hobbit Also Reference Guide with two other books Computer only three months old, worth overall £310 sell for £200 ono Ring Pethom 602 (evenings) Canterbury area, Kent

Software for sale for the Vic 20. Including many expanded games such as Krazy Kong and Jet-Pac If you want one of these games please contact Alex on 01-940 5767 or Paul on 01-940 2012

Commodore software to swap or sell Many British and American titles programs Include Zaxon, Blue Max, Jumpman Jr and many more Write (send your lists) to Per O Stava, 4274 Stol Norway (All letters answered).

Vic-20 owners penpal wanted Age 13 15 boy or girl Write or phone or send a program on tape to Chris 19 Ardfin Road, Prestwick, Ayrshire Scotland will reply (Unexpanded Vic)

Printer wanted for CBM computer to help with college work, any type but type-writer type preferred Phone Hayling Island 67439 any time 72 Ralls Lane, hayling Island, Hants

Teenage Vic user would like to hear from anybody from anywhere, aged 15+ Write to Andrew Harris 30 plas Newydd, baglan Moors Port Talbot, South Wales

Plymouth Commodore 64 Users Group Meets first Thursday of every month For further details ring Simon on Plymouth 772141.

Stanmore Commodore User Group – anyone interested? Contact Gavin Harris, 27 Silverston Way, Stanmore Middx HA7 4HS. Tel 01-954 4548

Wanted: Modem software for CBM64 with Minor Miracles WS2000 Modem compatible with following standards CCITT V21,V23 and American Bell 202 Ring 01-337 3183 evenings and weekends

Wanted: voltage transformer for Commodore 64 Ring Chris 0274 585417 anytime Also monochrome monitor

Want Vic 1540 disk drive leads and user manual Please contact me by letter Mt address is Hill Farm, Kersall Newark, Notts NG22 0BJ. thanks

Wanted: CBM64 software I will pay cash Write to C Watt, 2 Portland Tce, Hexham, Northumberland NE46 3D1 with any information and offers or ring Hexham 605314 after 6pm.

Switchable 16K RAM for a Vic-20 Phone Carterton 841496 anytime

Penpal wanted for Vic-20 user to exchange listings and and information Please write to Barsneb Farm, Markington Harrowgate HG3 3PJ, thank you. PS name is Raymond Peacock

Commodore 64 penpal wanted to write to a 13 year old girl Write to Jayne Faid 24 Woodville Road, West Denton, Newcastle upon Tyne NE15 7JZ

Wanted: a Commodore 64 user who will swap games Write to Danny Farrow, 7 South Park, Weeting Brandon, Suffolk or phone (0842) 812482 ask for Danny All letters answered

Vic-20 software Mole Attack and Menagerie (cartridges) £5 each Wizard and the Princess Catcha Snatcha £4 each Steve Hankinson, 2 Sunflower Close Springfield, Chelmsford, Essex. Tel Chelmsford 465148

CBM64 s/w sale. Internat Soccer £10 Rat Race £7, Defender (Atari) £15 Forbidden Forest £7, China Miner £4 50 Hover Bover £5 Defender 64 £4 50, Siren City £4 50, Exterminator £4 Cyclons £3 Faceache £2, Camels £5, Revenge £5 plus more Tel 0622 61917, ask for Ian

Commodore 64 daleywheel listings Easyscript prints etc Tape or disk, ring or write for quote 01-360 2156 or Mark Wilson 186 Prince George Ave, Southgate, London N14 4TD

Vortex Raider CBM 64 exciting action game on disk £8 ono Write to J Kidson Thrupp Farmhouse, Thrupp Lane, Stroud Glos GL5 2DF Tel Stroud 2255

Vic-20 plus C2N cassette (dust covers provided) 16k two adventure and two games cartridges Competition-pro joystick, 100s of great games Will deliver, bargain at £170 ono Tel Shaw (0706) 845834

Selling Stock Light Rifle hardly used, original box, three games, either Commodore computer £25 Contact Justin Stafford 41 Beech Tree Road, Holmer Green Bucks, Tel High Wycombe 713031 after 4pm

CBM64, 1641 disk drive MPS801 printer, joystick C2N tape recorder 10 disks word processor plus £150 software plus 1 pair paddles, worth over £1000. Sell for only £800 Tel Mike 01-657 1309 7 9pm

Bridge cartridge and Labyrinth cassette for sale unwanted gifts £25 ono G Hoult, 9 Elmlea Drive Olney, Bucks Tel 0234 711007

Toolkit for 4000 series Pets fits UD4 socket. Complete with instructions, cost £39 offered at £18 Phone Flax Bourton 2830 (Bristol) evenings or weekends

Commodore 64 address book and mailing labels program Uses tape or disk. £5 Also word processor on plug in ROM cartridge £25 Phone 0491 39497.

Commodore 64 games to swap or sell Prices ranging from £2.50 to £4 50 All original copies! Replies to Mr D Owen 52 Partridge Close, Chelmsley Wood Birmingham or phone 021-770 0492 (Monday to Friday)

Vic-20 plus cassette unit Super Expander, joysticks tape and cartridge software as well as books and magazines only £200 Contact Carole Painter 4 Tamar Gardens, Whitley Estate Reading, Berkshire RG2 7LB

Vic-20 Word Processor. Victext Powerful word processor Facilities include Large text buffer auto centre text variable tab insert amend delete copy move text word count right justify etc Fully menu driven with comprehensive easy to-use instructions Needs +16k expansion min Great value cassette £6 95 disk £9 45

IFIED

Atman Speech Synthesiser for Vic 20 4 months old £30 Dr Watson Beginners Assembly Language Course (book and cassette) £8 Arnok £1 All as new Mr S Y Law 36 Church St, Littleborough Manchester

Bargains! Vic-20 Programmers Aid Cartridge complete with user manual £20 Arnok (Audiogenic), Destroyer (Sumlock) £1 75 each Both brand new, originals Mr S Y Law 36 Church St Littleborough Greater Manchester OL15 8AA

Vic-20, C2N deck, motherboard, 28k switched RAM, 6502 assembler, Programmers Guide Vic Revealed £130 Richardson, Mereden, Bredhurst, Gillingham Kent ME7 3JW Tel Medway (0634) 35261

Vic-20 plus 16K, cassette unit Intro to Basic One and Two, joystick, lots of games books and magazines £150 00 ono or swap for 64 or BBC B Phone 0603 713542

Vic-20 plus 32K switchable RAMpack between 16K, 24K, 3K, block 5 Vic-20 RAMpack under guarantee Both £130 ono Tel 0655 82037 after 4pm Write 4 Craigie Avenue, Maybole, Ayrshire Scotland KA19 8BD

Super Expander cartridge. Very good hi res multicolour graphics, 1K of RAM and use of function keys, £20 Phone Ruislip 32649 and ask for Liam after 6pm

Vic-20, C2N tape, switchable 16K RAM plus Super Expander, 3 cartridges, Chess, Gorf, Omega Race plus over £70 of progs Jetpac, Hell Gate, Skyhawk etc Joystick, VGC Contact Lancing 752672 evenings

CBM64 100% original arcade game, Motor Mania, excellent graphics only £8 95 inc P&P Used twice only Contact John Din, 6 Bawtrey Road, Bessecarr, Doncaster DN4 5NW, South Yorkshire

Solutions to Scott Adams adventures £1 inc Send money with your name and address to Martin Wright, Alma, Cillennin, Lampeter Dyfed Wales SA48 8PM Tel 0570 470362

Commodore 64 with C2N cassette unit including three games manuals journals – boxed as new £200 Tel 01 574 9383 (evenings) or Staines 81 61688 x 372 (daytime) John Stevens 64a North Road Southall Middlesex

CBM64, C2N, manual, Reference Guide, books, Quickshot joystick, Colossus Chess, Llamasoft games assembler, blank tapes program collection, dust cover boxes. Bargain £260 for quick cash sale Marc, 01-961 6032

Software Future Finance and Easy stock on diskette £35 each Tel 037 384 317

Vic-20, C2N cassette unit, Introduction to Basic Part 1, 32K switchable RAMpack, games worth over £200, Quickshot joystick, excellent condition, worth £400, sell for £250 ono Tel (0639) 55281 South Wales

CBM64, C2N, joystick, Guide to Basic, Program Ref Guide lots of extra books Include some machine code books, ROM game plus 13 other cassette games £260 Day (01) 486 5811 ext 6548 or 01-699 3426 eve

Vic-20 with cassette player for sale £100 with 25 cassettes Arcadia, Scramble, also a 16K RAM cartridge All enquiries 17 Oldfield Road, Sale Cheshire after 6 00pm only

Vic-20 Super Expander £20, machine code monitor £20, adventure and games cartridges £5 each Arcade games and adventure cassettes £3 each All originals, consider swaps Tel (0734) 23653 Will post

Adventures for the 64 Send disk with one good program and receive four unique adventures in exchange Box 201 Alexandra New Zealand Include £2 for air mail return

Hobbit: can anyone tell me how to get out of Goblin's Dungeon? If so, contact Martin Smith, 67a Swithland Lane, Rothley Leicester LE7 7SG

I have an idea for a program which could be worth a fortune Unfortunately I can't write it. If you can contact R Ham, 188 Romford Road Forest Gate London E7 9HY

Wanted: Quickshot II pay up to £6 Phone Sean Seaton Delaval 372577 or write 48 Millfield, Seaton Sluice, Whitley Bay, Tyne and Wear NE26 4DD

Vic-20 boxed as new plus books plus software £90 ono C2N cassette unit £25 Contact Kevin Green 3 Flemish Fields, Chertsey, Surrey, telephone Chertsey (09328) 65031

Vic-20 Starter Pack plus 16K RAMpack, software worth £50 00 plus books worth £11 00, everything nearly new excellent condition, worth £250 00 will sell for £175 00 ono Phone Yately (0252) 876037.

Vic-20, plus 16K RAMpack £100 of games etc Only 3 months old, worth £290 will accept £170 Ring Wantage 65944 or contact Justin at 1 Elswith Close, Grove

Vic-20 games for sale, two pounds each Including Gridrunner, Galaxians, Creepers, Caterpillar, etc Phone Alford 6233 for details or write to Richard White Whitegates, Hanby Lane, Willoughby Alford, Lincs

Atari six cartridges Pitfall (£5) Defender (£5), Frogger (£5), Centapede (£10), Warlords (£3), Combat (£3) or £27 50 the lot Simon Hegarty, 15 Highfields Hoylandswaine Sheffield S30 6JP Tel Barnsley 762349

Commodore 64 code breaker A game of logic, find the hidden colour code, excellent graphics and sound Only £2 99 Send cheques to M Caulfield, 176 Ardilaun, Portmamock, Co Dublin, Ireland

Vic-20 four months old, C2N cassette, 3 tapes, 1 book, unwanted gift £90 ono, Tel Leven 29513 (Fife).

Vic-20, Super Expander, C2N, Sargon Chess, Adventure Land, Voodoo Castle cartridges, 2 books, 30 games Will separate phone 021-3536383

Vic-20 software for sale Many titles from £2 50. All original Phone Mitchell (0362) 4497 for details or write 9 Moorgate Cottages Southend, Dereham, Norfolk NR19

Vic-20 Starter Pack, 16K switchable RAMpack, tapes plus cartridges, dust cover, joystick, and many books £160 ono Contact Neil Allen, 9 Marley Road, Hoo, Rochester Kent Phone (0634) 251354.

Vic-20 plus cassette recorder joystick, Super Expander 8K, twelve games, three utilities. Offers for complete package Tel J Wilson 01-427 2937

Wanted penpal to exchange Vic-20 programs with for details write to 57 Mayfield Way, Barwell Leicestershire LE9 8BL

Vic-20, 32K RAM switchable, £75 software, manual, Reference Guide, joystick, data recorder loads of programs and mags Good condition £200 R Mann, 5 Carlisle Road, Slough, Berks, Tel 34123

IBM 3982 Golfball business printer, 15" long carriage plus IEEE-488 (Pet) interface (G R electronics, Newport) Printer measures 20" x 11" x 9" £50 ono Dartford (0322) 24261 52 Weardale Avenue Dartford, Kent

Commodore joystick, hardly used Comes with a free imagine game of your choice, only £6 Tel (08832) 3563

Vic-20 games, Skramble, Nightcrawler Ski-Run, Space Phreaks all run on unexpanded Vic Originals £3 50 each or all four £12 Canterbury (0227) 58529

64 Easy Script for sale, brand new, never used, any offers considered Salisbury 20154 Jason Kendall 55 Queen Alexandra Road, Salisbury, Wiltshire SP2 9LL

Word Craft 20 word processor for Vic-20 Cost £125, accept £50 for quick sale Tel 01 953 7320

Commodore business system, 8032 computer, 8050 dual disk drive, 8027 daisy wheel printer £1100 ono (0223) 314517 after 7pm.

64 tape indexer. Are all your tapes mixed up? Then you need a 64 tape indexer keeps index of programs on tape easily amended Send £5 00 to: Alan Williams, 16 Hedge Hey, Runcorn, Cheshire WA7 2HP. Phone (09285) 67734 6-8pm

Commodore 64 brand new, still in box, bargain at £190 Also Acorn Electron, same price and condition Peter Nicholson, 33 Fern Hill Road, Shipley, Tel 580169

Vic-20 games for sale All originals half price or less Write or telephone to, 6 Oakwood Avenue, Elgin, Scotland, (0343) 7347 Ask for Paul, after 5pm

Vic-20 16K RAM, cassette recorder, machine code monitor, Super Expander 4 cart and several cassette games motherboard, Ref Manual, joystick, worth £300 plus, will sell separately or for £150 Phone (0308) 56504

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CBM64 software to sell or swap Includes Jumpman, Aztec Challenge (American) and Booga-Boo Falcon Patrol, Scuba Dive Bitmania, Star Command, Armageddon, Cosmic Convoy, all originals plus others such as Snooker, Jumpin Jack Post Paid Tel (0527) 24340

Imagine games worth £11, Wacky Waiters, Frantic, for only £6 Apply to 6 Pennine Court Doxford Park, Sunderland SR3 2HP Tel after 5pm Sunderland 281207

Wordcraft 40 (Audiogenic) word-processor on cartridge, easy handbook, unused Cost £89.95 Accept £50 or offer Tel 01 427 7052 eves

64 software for sale Simons' Basic £25, Loderunner (disk) £15; Witness (disk) £20; Aztec Challenge (disk) £7, Lazarian (cart) £7.50, High Flyer (disk) £7.50, all originals; Tel. 01-954 4548 ask for Gavin

Stack Light Rifle for sale hardly used, three games, for either Commodore computer, £25 Contact Justin at 41 Beech Tree Road Holmer Green, High Wycombe, Bucks Tel High Wycombe 713031.

Brand new unwanted software for CBM64 Ring of Power £7.00 Who Dares Wins £3.00 Paratroopers £3.00 Super Blitz £3.00 Mr Wimpey £4.50 Elliot Products 50 Brynawel, Brynmawr, Gwent, S Wales

Vic-20 Starter Pack, 16K RAMpack, books, dust covers £100 Software worth over £100 also available Mark Turner 6 Riverside Walk, Midsomer Norton, Bath, Avon, Telephone 0761 415294

Vic software for sale, Arcadia Catcha Snatcha, Skramble (joystick) £2, Panic, 3D Time Trek (16K) (joystick), Dungeons (16K) £3 Cosmic Cruncher Avenger £5 £20 the lot Phone Pete 01-524 6722

CBM64 software swap. Cassette only Arcade Adventure Utilities and Educational Phone 041-812 3130 ask for Mel

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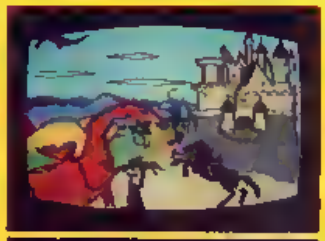

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